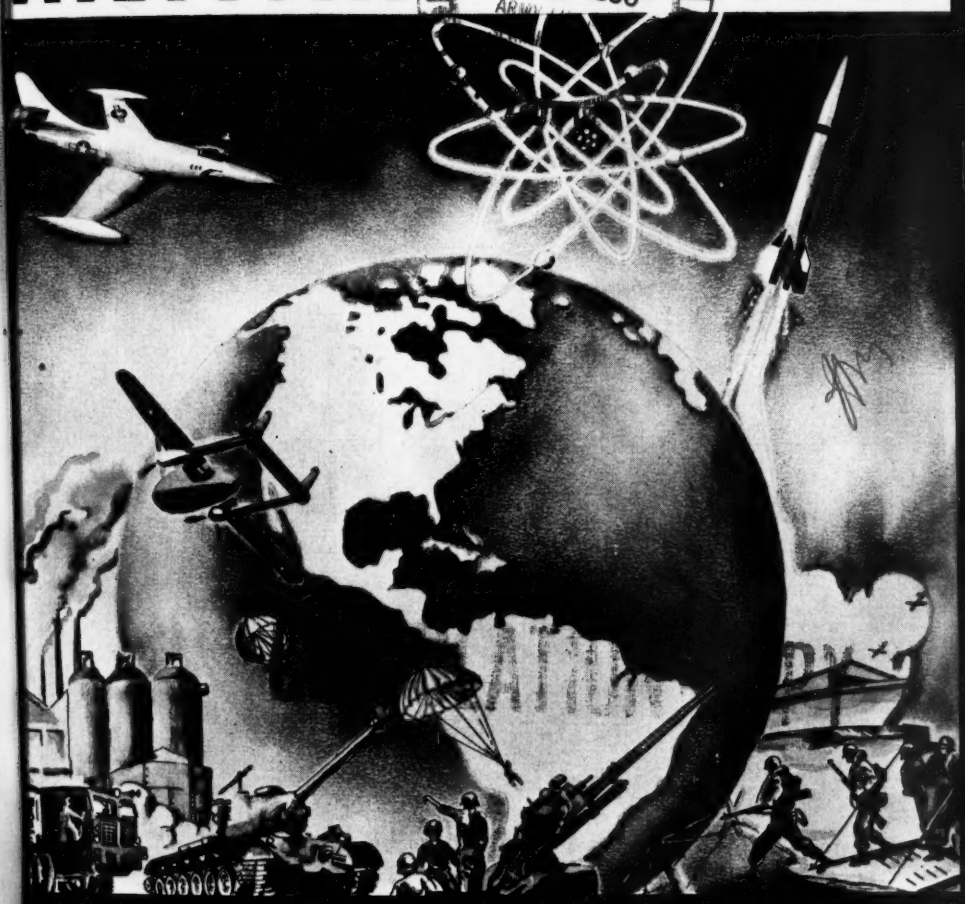
MILITARY REVIEW



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FORT LEAVENWORTH, KANSAS

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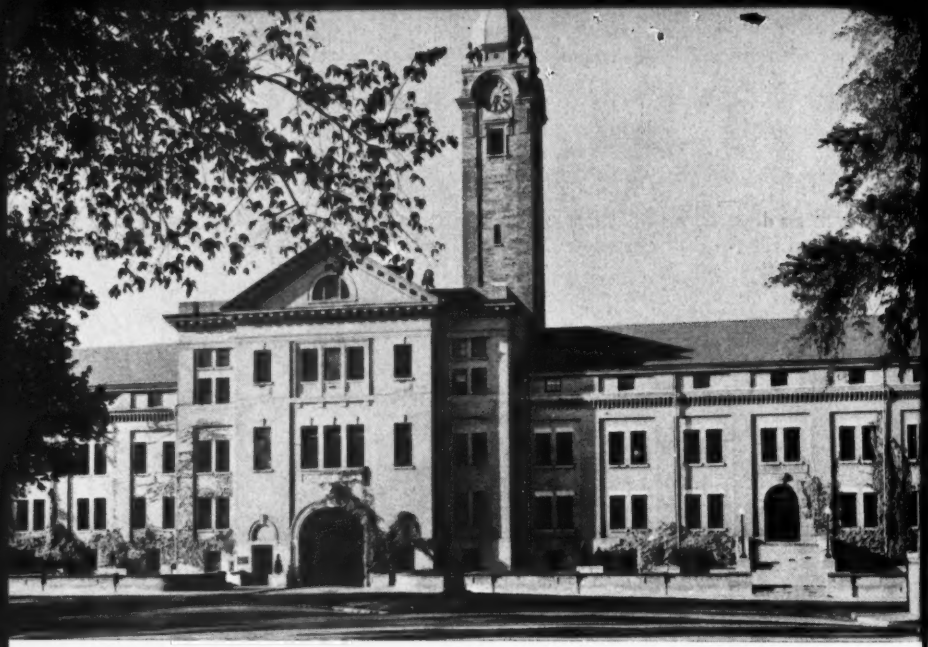

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MILITARY REVIEW

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WHAT SITUATION?

Colonel John W. Romlein, *Artillery*
Instructor, Command and General Staff College

The views expressed in this article are the author's and are not necessarily those of the Department of the Army or the Command and General Staff College.—The Editor.

IN ALMOST all armies there is a formal method of appreciating the situation. The format differs but in every case the result sought is a sound decision. In our service we do this by *estimating the situation.* The situation is the terrain and weather; the strength, disposition, composition, morale, and effectiveness of the opposing forces.

This means that *the* situation really consists of two situations, our own situation and the enemy situation. We have all seen these two situations posted on the G3 and G2 maps respectively. Our service schools go to great lengths to teach the *estimate of the situation,* with considerable emphasis on the *estimate,* but without much consideration of the *situation.*

When a commander, in battle, estimates the situation, he should realize that there are at least five situations existing at that time. There are: the true situation, the situation as seen by our own commander, the situation as seen by the enemy commander, the situation we think the enemy sees, and the one he thinks we see.

The true situation is easily disposed of. This may eventually become known provided:

1. That both sides keep accurate records.
2. That these records are made available to a disinterested historian.

Most likely, however, the true situation will never be known, so, for practical military purposes we can discard it in discussing the estimate of the situation. What situation then, do we estimate?

Our Situation

The commander depends upon his staff and his subordinates to keep him informed of the friendly situation. It can be assumed that the commander's knowledge of the situation of his own forces approximates the truth. Some disasters and near disasters have occurred, however, because commanders thought that their forces were where they actually were not.

The Enemy Situation

The other part of a situation is the enemy situation, generally posted on the G2 map, and filled in by intelligence. This cannot reasonably be expected to be as well known to the commander as his own situation. However, if we admit that half of the situation comprises the enemy situation, we at once realize the fundamental importance of intelligence. Good intelligence is priceless, and Napoleon *under-*

Which situation do we estimate? Actually five situations exist—they are: the true situation, the one seen by us, the one seen by the enemy, the one we think that the enemy sees, and the one he thinks that we see

stated its worth when he said, "One good spy is worth 20,000 men."

Napoleon at Waterloo

Napoleon's Waterloo campaign is a good example of the wrong situation being estimated. His plan was to divide the British under Wellington from the Prussians under Blücher, and defeat the two forces in detail. Blücher was concentrated at Ligny; Wellington was concentrating west of Brussels. On 16 June 1815, Napoleon attacked Blücher and defeated him. A mix-up in staff procedure resulted in D'Erlon's corps not attacking the Prussians in flank. This corps, in fact, spent the day marching and countermarching between Ney who was fighting a British force at Quatre Bras and Napoleon at Ligny. Even so, Blücher was defeated—but not routed.

Napoleon ordered Grouchy to pursue the Prussians. Grouchy was dilatory in his pursuit, and submitted erroneous reports to Napoleon concerning the Prussian dispositions. Napoleon was led to believe that Grouchy was pursuing Blücher to the east and was, therefore, between Blücher and Wellington. Actually, Blücher had withdrawn to the north and was approaching Wellington.

In the battle of Waterloo, Blücher came to Wellington's assistance while Grouchy and his 30,000 men never participated. The results are known.

We can now give a partial answer to our question. What situation do we estimate? Namely, a situation composed of the best information on our forces and the enemy; but this is only one situation. There are actually three additional situations.

Next in importance is the situation which our opponent is estimating. He generally knows more about his forces than we do. On the other hand, he knows less about us than we do. Consequently, he sees the situation differently. In fact, a little faulty intelligence on both sides, some negligent staff officers, and one or two hard-headed subordinates can produce a situation which neither commander approximates. Furthermore, the situation as seen by each of the opposing commanders not only differs radically from the truth, but also does not resemble that of the other commander.

Battle of the Philippine Sea

The Battle of the Philippine Sea is an example of commanders on the opposing sides not knowing the situation. Because of the extensive coverage of this battle it will be necessary only to refresh our memory to bring out the point. It is evident that Admirals Nimitz and Kinkaid thought that Admiral Halsey had left Task Force 31 to guard the San Bernardino Strait. In fact, Task Force 31 had proceeded with Halsey past the Strait leaving it unguarded. Hence, not all the American commanders knew where their own forces were. At the same time, they did not know of the whereabouts of the enemy San Bernardino Strait force until it appeared in Leyte Gulf.

Faulty Knowledge

What did the Japanese admiral know of the situation? Probably not very much. His decision to retreat just when he had the Leyte Gulf expedition at his mercy must have been based on false information concerning the American forces, and his own forces. Certainly his presence in Leyte Gulf indicates that his mission was to destroy the joint expeditionary force. With

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this in mind, the only explanation of his action is an estimate based on faulty knowledge of the situation.

Assumed Situations

We have now discussed the three most important situations: the true one, that one which our commander estimates, and the one which the enemy commander estimates. There are still two additional situations existing. There is the situation which we think the enemy is estimating and the situation which he thinks we are estimating.

Both of these situations result from counterintelligence and deceptive efforts. By counterintelligence activities each commander tries to conceal as much of his situation from the enemy as possible. If a commander's counterintelligence efforts were wholly effective, his opponent could, at best, have only 50 percent of the situation to estimate—that is, his own situation.

Counterintelligence—Deception

Counterintelligence attempts to leave the enemy with an inadequate picture of our situation, hoping that he will make a poor decision based on an ineffective estimate. Deception, on the other hand, is aimed at giving the enemy a false picture of our situation, in the hope that he will make a good estimate of the wrong situation and arrive at the wrong decision.

El Alamein

There are several examples of deception and counterintelligence to prevent discovery of the deception. Field Marshal Bernard L. Montgomery deceived Field Marshal Erwin Rommel prior to the Battle of El Alamein both as to the time and place of the initial attack. By constructing a dummy pipe line toward the south, and by its rate of construction, by the use of dummy vehicles and supply dumps, and their rate of build-up, and by concealing the assault troops in slit trenches for an entire day, the assault was delivered on the night of 23-24 October 1942, in the north, while Rommel expected an attack sometime in November in the south. Plainly, Field Marshal Rommel was estimating a situation which did not exist. Furthermore, Field Marshal Montgomery had a good idea as to what situation Field Marshal Rommel was estimating.

Assumption

With so many situations, how is it possible to pin down a situation so we can estimate it? This we do by using assumptions. Indeed, by using assumptions we can set up several situations; estimate them, and reach a decision for each one. Then, as the situation is developed by information, we can bring up-to-date that assumed situation which most closely resembles the actual situation.

Assumptions may also fulfill another function. When we are in a hopeless position, or faced with a very difficult task, we should cast around for some assumption which will modify the situation, then work to make that assumption come true.

Battle of the Bulge

For example, in World War II, a large-scale German counteroffensive in Western Europe would have been pre-doomed to failure against allied air superiority. However, let it be assumed that the allied air force were grounded. Now all the German High Command had to do was to find out when the weather would ground the allied air force for a considerable period and plan their counteroffensive for that period. They did this, and the Battle of the Bulge was initiated when the weather precluded effective allied air support of the army forces.

Conclusions

It has been shown that the situation being estimated depends upon knowledge of one's disposition, intelligence, counter-

intelligence, and deception. Let us examine the various levels of military endeavor and see which of these are inadequately stressed or are particularly applicable at each level.

The tactical level (division and below) —at this level it appears that deception is particularly applicable. This is so because here its success is not dependent upon the deception being maintained over a long period of time. At this level we should sell the enemy a gift-wrapped situation most suitable to our own plans.

The intermediate level (army and corps) —at this level information concerning our own disposition seems most susceptible to improvement. Not that subordinates are not told to report their situation often enough. Indeed, for this purpose we have devised phase lines, check points, scheduled reports, scheduled objectives, and all kinds of status reports. But where have we stressed that the superior should inform the subordinate of the friendly situation on a periodic basis?

The strategic level—at this level military operations are conducted in two spheres—theater and national. At the national level, intelligence is supreme. A nation which adopts a course of action based on inadequate intelligence cannot be as effective as the nation which knows the enemy's situation.

At theater level the situation is almost the same. However, at this level it may be a question of intelligence organization as well as intelligence.

Let us assume that the theater organization comprises several allies. Further assume that the intelligence in question is controlled by only one ally. Under these circumstances it appears likely that the intelligence so compiled might be in the best interest of that particular member rather than in the interest of the common goal and that the theater commander will be estimating situations which dictate decisions favorable to this one ally's interests.

In conclusion, the soundness of the decision which the commander makes, depends upon *what* situation he sees (or how accurate is the situation he sees) more than upon his method of evaluating the situation. Therefore, it is vital that the situation portrayed to the commander be the most accurate that may possibly be produced.

Professional competence is more than a display of book knowledge or of the results of military schooling. It requires the display of qualities of character which reflect inner strength and justified confidence in one's self.

Lieutenant General Maxwell D. Taylor

Has the Army Lost Its Soul?

George Fielding Eliot

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The views expressed in this article are the author's and are not necessarily those of the Department of the Army or the Command and General Staff College.—The Editor.

IT'S ABOUT time for the people of this country to make up their minds whether they want a reliable fighting army or a uniformed bureaucracy. They cannot have both. The strength of an army—its soul, for that matter—resides in its fighting units.

Much to Learn

The officers and men who compose those units must devote all their time, or almost all of it, to the immensely complicated, difficult, and delicate business of learning how to use their intricate weapons systems, to communicate with each other in the field, to move as fighting teams from place to place under battle conditions, and to survive under the attack of enemy weapons equally formidable.

Anything which detracts from this primary task is an injury to the fighting quality of the army and an affront to the soldierly spirit of its units.

The central objective to which all planning at the highest level should be directed is the production and preservation of these fighting units: the regiments and separate battalions of infantry, artillery, armor troops, and engineers upon whose prideful performance in the hour of peril the safety of the nation is staked.

Instead, the central objective, as of now, appears to be the gathering of all the threads of power into the hands of a centralized administration in the Pentagon. Everything is done according to a system devised by bright minds at the seat of authority.

Smaller and smaller grows the scope for initiative, for the exercise of individual responsibility by regimental, battalion, company, and battery commanders, let alone lieutenants.

The company officers in turn, trying desperately in minor ways to impress their individualities on their units, filch from the noncommissioned officers any vestige of authority and prestige the latter might otherwise have. The regimental sergeant major used to be a great man—remember? Today he's just a chief clerk in the adjutant's office (excuse an old soldier—I mean the S1's office, of course). The first sergeant used to be the captain's right hand and strong arm. Now he is an errand boy for a warrant officer called a "unit administrator" (Isn't that a modern hotshot efficiency title for you?).

Running an army on a business basis may destroy the 'esprit de corps' that is so essential to a good fighting unit. Units should be more than just a list of numbers, to be changed, shifted, or abolished at a whim

Too Much Paper Work

It is all very well to say that without the unit administrator, the company commander would have no time for anything but paper work. Unhappily, he doesn't anyway. There's just too much paper work —and the consequences of neglecting any of it are more immediate and certain than the consequences of neglecting training. Hell hath no fury like the staff officer who doesn't get Form X-4-11-44 right on the dot, to complete his sacred files.

"I tried to train my troops, a job I love," writes an infantry company commander, "and leave the paper to my unit administrator. The first records inspection drove me back to my orderly room, from which I emerged only for parades and the troop information program."

From corporals to colonels, the men whose main job is to train fighting soldiers and forge them into fighting units find themselves instead mere cogs in the vast machinery of the "system"; martyrs to the American devotion to the idea that the American businessman is the most efficient individual in the world and therefore that all American institutions should be "run on business lines."

System Does All

Personnel management, mess management, training, discipline—the system does them all, under the direction of unseen and unknown efficiency experts far off beyond the dim horizon—the gods of the system, to whom daily and hourly obeisance must be made in the form of sheaves of reports in quintuplicate.

The poor soldiers are all bogged down in the resultant mess of paper, over the top of which the harassed unit commander can barely see the men he is supposed to be training and whom he would have to lead in battle if battle were joined tomorrow morning. Everything is checked and double-checked.

"Responsible officers and noncommissioned officers who are expected to lead men in combat," an infantry officer writes, "are treated like delinquent, idiot children."

Something Must Be Done

It's gotten to the point where the attitude is clearly discernable in some quarters of the Pentagon that the combat units exist to be the servants of the administrative system. And don't think the men in the combat units don't get the drift. Something has got to be done about this, or we won't have any combat units worth mentioning, much less worth throwing into battle against a determined and dangerous enemy.

The Army, like the rest of the Armed Forces, is now settling down for the long pull. For the first time in our history, the Armed Forces Reserve Act gives prospect of building up a real Army Reserve. Indefinite extension of Selective Service seems certain. We are on the threshold of a system of universal service such as has, by stern necessity, been imposed on our European friends these last 80 years or so.

The Army has here a special responsibility to the nation, for it will get the bulk of the drafted men as long as the option of voluntary enlistment for all three services continues to be maintained. The soldier who does his 2 years "with the colors" will then have a 6-year Reserve

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obligation. What is the Army going to do with these young men?

What it does with them now isn't too inspiring. The system takes hold of them from the very outset—the formless, faceless, impersonal system. They are processed, classified, assigned to a training unit—among strangers. They never get to feel any sense of identity or belonging—what's the use? They won't be there long.

Completing their basic training, they go (the combat soldiers) for the most part to Europe or the Far East. They travel with strangers. They are assigned to a unit in which they are strangers.

After a while they begin to settle down, to feel that they belong to that outfit—especially if it is a good outfit, with unit pride and competent commanders. Of course, the noncoms who receive them and begin molding them into real soldiers are rotated out before they've gotten acquainted; their officers are being constantly changed.

But somehow they do begin to fit—and then their time is up and they're rotated back to the United States, assigned somewhere or other (any old where) to fill out their last few weeks, processed again, and released from active duty.

But then comes the reserve tour. Join the National Guard, a home-town outfit? Ha, says the soldier. I've seen those National Guard outfits overseas. When they need 'em, they call 'em into Federal service, tear 'em to pieces, scatter the home-town boys to the four winds of heaven. They'd even take the old numbers and colors and traditions away from 'em if they could. Don't give me this "serve with your neighbors" stuff. That's too human for the system. Impersonal. That's their ideal.

But what about the Class A units of the Organized Reserve? There's one that belongs here in town. But wouldn't they get the same deal as the National Guard, only worse because there'd be no state authorities to fight for 'em? Of course. They're not units to the system—they're just collections of manpower to be used as the system may think best.

So it's a fair bet that the bulk of our new reservists will rock along, being called up for training (with strangers) when they can't get out of it, and longing for the day when they're freed at last of the clutches of a system that hasn't learned how to treat them like soldiers.

Loyal to Country

Loyalty? Of course they're loyal—to their country and all it stands for. But how can they be expected to be loyal to an army that remains just a far-off faceless something with which they never really come in contact? They know well enough that the men who command them are just the servants of the system. They have no chance to acquire loyalty and pride in any unit, they don't stay with one long enough.

There's an answer to this problem. It's an answer which the British, the French, and the Germans have long understood. It's an answer which Alexander found when he created the first truly organized army of history. It's an answer which held the world in fief for Rome.

The answer is simply—don't try to build an army out of men. Weld the men into *teams*—regiments, battalions—and then put those teams together to form your army. Build the spirit of your army not on slogans and the troop information program but on the sound basis of team spirit, unit pride.

Your units must not be just numbers on a list, to be changed and shifted, abolished and recreated at the whim of someone behind a desk. They must be imperishable. "Men die; the Regiment lives."

No army in the world has done this as thoroughly—and with as good results—as the British. Just recently a battalion of the Gloucestershire Regiment fought,

literally, to the last man in Korea. That battalion was the old 28th Foot.

To this day they wear their cap badges front and back to remind them of the day in 1801, on the beach near Alexandria, when they were attacked front and rear by French cavalry. "Rear rank, about face!" cried their colonel—and they fought there back to back till reinforcements came.

At Quatre Bras in 1815, Sir Thomas Picton led them in a charge that broke Ney's lines—"Come on, 28th! Remember Egypt!" Do you think the men who fought in Korea had forgotten these past glories or that they would do anything to dim them?

Every recruit is taught the regimental history—shown the colors and the trophies—when first he joins the depot for training. Every time he has to polish two cap badges instead of one, he remembers why he wears them. Silly? Yes—to a civilian efficiency expert. You'll look a long way for the experienced soldier who'll think it silly.

The "Die-hards"

Or take the Middlesex Regiment—known throughout the British Army as the "Die-hards." Why? At Albuera, in 1811 (they were then the 57th Foot) they were fighting off three times their numbers of Napoleon's veterans. Colonel Inglis, mortally wounded, cried again and again with his dying breaths: "Die hard, 57th! Die hard!" They did. They went into that fight over 600 strong; they came out with 116 unwounded men.

And in 1917, in the formless mud of a Flanders battlefield, I was leading a combat patrol trying to establish touch with the flank of a British division on our right. Its flank battalion was of the Middlesex Regiment. I came at last upon a lance-corporal and three privates of the Middlesex in a mudhole. The privates were dead, the noncommissioned officer dying.

But there were some dead Germans scattered in the mud, too, and the flank had held. The lance-corporal, lifted himself on one elbow: "We died 'ard, sir," said he with his dying breath—like his long-ago colonel at Albuera.

Same spirit. Bequeathed down the ages. And still putting into soldiers' hearts that last ounce of grim devotion that wins—wins—wins when the slide rules would say that, by all the percentages, the fight's lost.

Regimental Pride

What does it? Arthur Bryant writes of the fight at Albuera:

> The dwindling line continued to close in on its center and still, scarcely more perceptibly than a glacier, to advance on the dazed and astonished French until it was no more than twenty yards away, leaving its dead in rigid lines with every wound in front. *Pride in their regiments and a dogged refusal to admit themselves beaten in the presence of old rivals and comrades kept these stubborn soldiers there.*

"A Home in the Army"

Recognizing the supreme importance of this unit spirit, this regimental pride, the British Army takes the utmost care to preserve it. When a soldier enlists or is drafted into the British Army, he joins a *regiment*. In that regiment he stays during all his service, active and reserve, unless he himself applies for transfer to another corps. He has "a home in the army," a place *where he belongs*.

From the moment he reports at the depot for training, he begins to learn that his regiment is somehow different from and better than any other. "In The Regiment we do it *this* way"—nonsense at first, a sacred tradition after it begins to take hold, after he sees that all those about him respect these identifying practices.

His regiment may be very ancient, like the Royal Scots, dating from 1678 in the British service and maybe another 1,000 years of legend. It may be very new, like the Parachute Regiment, only a couple of

years of age. But new or old, it is *a* Regiment, *the* Regiment, *his* Regiment.

There are a hundred little things constantly to remind him that he is the custodian of undying glories, that he belongs to a military family whose honor is his honor.

Even the military title by which he is called varies from unit to unit—a soldier in a Fusilier regiment is not Private Jones, but Fusilier Jones; he is Rifleman Jones in a Rifle regiment, Guardsman Jones in the Foot Guards, Trooper Jones in the Cavalry (though today he rides a tank), Gunner Jones in the Artillery, Sapper Jones in the Engineers.

Presented to the Colors

He is presented to the colors—the meaning of the battle honors borne on them are explained to him. He learns the regimental motto—and the reason for it.

If he is in, say, the Somerset Light Infantry, he notes that his sergeants wear their sashes over the left shoulder, a privilege reserved in other regiments for officers. Why? Because in a long-ago battle, when the officers were all dead, the sergeants took charge and led on to victory.

If he is in the Rifle Brigade, he hears the command: "Fix swords!" instead of "Fix bayonets!" and learns that in the Peninsular War his regiment had sword bayonets for emergency fighting.

It would never occur to the British War Office that because the 8th Royal Irish Hussars are now equipped with *Centurion* tanks instead of horses and sabers they should have their honored name changed. Good God, man! They've been the Royal Irish since 1693! They fought under Marlborough! You might as well ask 'em to give up their buff sword belts!

The French do this sort of thing too. When the French Army was being rebuilt after World War II, the oldest regiments with the most honored traditions were chosen as the first to receive modern weapons and become the "covering force" on the frontier.

I remember the colonel of the 93d Infantry of the Line telling me of a recruit at his first parade being presented to the colors. When the noncommissioned officer who was explaining the battle honors came to "La Moskowa, 1812," this lad could not contain himself. "Moscow, eh?" he burst out. "Why, if we've been there once, we can go there again if we have to."

And what does the United States Army do about all this sort of thing? Little or nothing. The Marines have the gift of it. They cherish their honored memories and their honored dead. The dying switchboard operator on Midway, who stuck at his post with shattered legs and kept the communications system going amid the falling of bombs, said it all when his colonel tried to tell him he'd done well. "Hell, colonel," said he in some surprise, "we're Marines, ain't we?"

The National Guard tries hard to keep up unit pride and spirit, but when they're called into Federal service, the system breaks all that up in a hurry.

The Regular Army has some fine old regiments with traditions as splendid as any that ever graced the British Army List. But the maintenance of those traditions is left to the mercy of the commanding officer for the time being. The system doesn't bother. Why should it? As things stand, nobody stays very long in one outfit anyway.

Wouldn't Fit the System

The idea of a soldier serving out his full period of active and reserve service in just one regiment wouldn't fit "the finest personnel system in the world." It might introduce undersirable complications. It might also give men something to live and die for that they can't get from any personnel system. But you couldn't plot a curve to prove it.

Says Brigadier General S. L. A. Marshall in his book, *Men Against Fire:*

While giving lip service to the humanitarian values and while making occasional spectacular and extravagant gestures of sentimentality, those whose task it was to shape personnel policy have tended to deal with manpower as though it were motor lubricants or sacks of potatoes. They have destroyed the name and tradition of old and honored regiments with the stroke of a pen, for convenience's sake. They have uprooted names and numbers which had identity with a certain soil and moved them willy-nilly to another soil. They have moved men around as if they were pegs and nothing counted but a specialist classification number. They have become fillers-of-holes rather than architects of the human spirit.

The 3d Infantry

Take our oldest infantry regiment—the 3d Infantry. It dates from 1784. It led the van at the storming of Chapultepec. It covered the retreat of the defeated Union Army from the debacle of First Bull Run. "Major Sykes' regulars," wrote the Confederate General Joe Johnston, "made a steady and handsome withdrawal, protecting the rear of the routed forces and enabling many to escape by the Stone Bridge."

The 3d was the only regular infantry regiment which fought right through the war, from Bull Run to Appomattox, with the Army of the Potomac. It has been known in the Army as "The Old Guard" for more than a century. So what did this fine old regiment do in World Wars I and II?

Nothing. Believe it or not—nothing. It never got into battle.

The last time the 3d heard a shot fired in combat was in the Philippines in 1906. In the two big wars the system just didn't find a place for it. "Can you imagine," writes one of its former officers, "the British fighting two major wars without using the Grenadier Guards?"

"Deactivated"

Then in 1946, the system proceeded to "deactivate" the 3d Infantry—The Old Guard. It didn't fit into the Troop Program. This was too much for "Lighting Joe" Collins. When he became Vice Chief of Staff in 1947, he went to work to have the 3d reactivated, and he got that done in 1948.

But it still didn't fit the sacred Troop Program, so they made it into a ceremonial regiment for the District of Washington, with six understrength rifle companies and one heavy weapons company. It's still there.

What a waste of the very life-essence of armies! But no smug minion of "the finest personnel system in the world" will ever be summoned before a Congressional committee and called to account for *that* waste. It can't be measured in dollar signs or added up in the tangled columns of the military budget.

A Lost Battle

It just might, however, be measured in terms of a lost battle one of these days—when beset and battered and bewildered soldiers might not, as the breaking point came close, be sustained by the inner thought; "Hell, we can't break—we're The Old Guard!" That could even be the battle we couldn't afford to lose.

Or take the matter of bands. "The finest personnel system in the world" got busy on bands some time back. Bands used to belong to regiments. They were part and parcel thereof. Officers used to chip in to buy gaudier trimmings and better instruments for "our band—best damn band in the Army."

But no more. There's one band in each division (18,000 men) plus a lot of so-called Army bands with numbers neatly attached, stationed around here and there, belonging to no unit. This is tidier and less wasteful of personnel—or is it?

Rudyard Kipling, who knew something about soldiers, wrote on this point:

A band . . . revives memories; it quickens associations; it opens and unites the hearts of men more surely than any other appeal. The tunes that it employs and the words that go with them may

seem very far removed from heroism or devotion; but the magic and the compelling power are there to make men's souls realize certain truths which their minds might doubt.

Band Interprets Thoughts

Kipling goes on:

More than that, no one—not even the adjutant—can say for certain where the soul of a battalion lives; but the expression of that soul is most often found in the Band. It stands to reason that a body of twelve hundred men whose lives are pledged to each other's keeping must have some common means of expressing their thoughts and moods to themselves and to their world. The Band can feel their mood and interpret their thought.

Steadying Influence

A wise and sympathetic bandmaster—and most that I have known have been that—can lift a battalion out of depression, cheer its sickness, and steady and recall it to itself in times of almost unendurable strain. . . . I remember a cholera camp in India, where the men were suffering very badly, when the Band of the 10th Lincolns started a regimental sing-song one night with that queer defiant tune, "The Lincolnshire Poacher."

You know the words. It was merely their Regimental march, which the men had heard a thousand times. There was nothing in it except—except all England—all the East Coast—all the fun and daring and horseplay of young men bucketing about the big pastures by moonlight. But, as it was given, very softly, at that bad time in that terrible camp of death, it was the one thing in the world which could have restored—as it did—shaken men to pride, humour, and self-control.

But—it had to be *their* band to do that. No anonymous army band with a number and no regimental identity could have filled the bill in that hour of desperate need. They wouldn't have known how, for one thing, and for another they wouldn't have been there. Some bright staff officer would have pointed out that it would be silly to send a band into a cholera camp. Some of 'em might get sick and die. The Lincolns' band was there because it was its duty to be there.

British Keep Bands

Wasteful of personnel to have a band in each regiment—a band that belongs there? The British don't think so. Heaven knows their Army has been cut and cut and cut by the economy ax—but they still have a band in every infantry battalion, and in most of the cavalry regiments, too.

I saw the band of the 1st Battalion Royal Warwickshire Regiment in Palestine in 1948—as grimly unpleasant a place, at that time, as a soldier could be in. It was marching off from a formal guard mount, as bright and glittering as though on parade at Aldershot, with the famous regimental antelope mascot led out in front of the drum-major by its traditional escort (the Warwicks won the antelope for their badge in 1710 at the storming of Saragossa when they smashed the French and Spanish cavalry, capturing 20 guns and 30 standards—among them a Moorish flag with an antelope device).

No Bands for Us

But our Army can't have regimental bands. The personnel boys don't approve of 'em. Not even though it's been pointed out that the bandsmen can be used as litter bearers in the field (as they always used to be) so that if you cut the regimental medical company from 208 men to 180 and add 28 bandsmen, you aren't out anything in actual serviceable manpower by any kind of efficiency standards. (To say nothing of what you've added on the spiritual side, for which there are no slide rules.)

I suppose one of the reasons we don't go in for this sort of thing—traditions, regimental identities, bands—is because of a queer feeling that they're somehow foreign and "un-American." Yet American soldiers react to them like any other soldiers.

The late Colonel John W. Thomason—himself a Marine, and therefore knowledgable on these matters—tells how two officers of the Texas Brigade protested to President Jefferson Davis:

They tell us, Suh, in our camp, that the War Department is getting ready to issue an order, to take away our state names—to break us up and

mix us around, and to number us by regiments and brigades and divisions like any bunch of conscripts brought in by a posse!

Mr. President, the Texas Brigade came up here in the summer of 1861. Right after Manassas. We popped our first caps at Ethan's Landing. We was the boys that broke the line at Gaines' Mill. Second Manassas, Mr. President!

Sharpsburg—you slick civilian, there, did you ever hear tell of the cornfield at Sharpsburg? Fredericksburg! Gettysburg! Chickamauga! The Wilderness! An' Spottsylvania. Cold Harbor! . . .

We have our battle flags that our women gave us, Mr. President. They are Texas flags. Texas ladies made them. Texas boys fought under them. Those names I named you, they are on those flags. Will you take 'em away from us, an' give us a number in place of them? And a number in place of our Texas name?

Mr. President, we Texans have obeyed orders. We aim to keep on fighting while the war lasts. But, Mr. President, we are the Texas Brigade, an' so we will remain . . .

That's the whole story in a nutshell. We have been learning and unlearning this lesson for 180 years. We can apply it now, as we set our hands to the great task of establishing a permanent system of military service for the protection of this nation in troubled times. We can build our regiments—permanent, indestructible regiments—based on the traditions of a glorious past, drawing upon the spirits of the men who suffered at Valley Forge, who stormed the British guns at Lundy's Lane, who planted the scaling ladders against the walls of Chapultepec, who fought through the long years of 1861-65, and of World Wars I and II—and those who have added new luster to their arms in Korea.

Can Build an Army

Having reclaimed these traditions and built our regiments, we can then build from them an army in which every combat soldier will have a sense of belonging—a loyalty that he can feel and understand.

He can train, not in some faceless training division, but at the depot of his own regiment. He can go overseas to join it—not as an item in a package of groceries tied up with a string, but as a draft of *the* regiment, going to join his own. When he's rotated, the regiment rotates. When he goes to the reserve, he is a reserve soldier of his regiment. If he's called back, he rejoins it. When he takes his annual training tour, he trains with it.

Sure, there'd be difficulties. You'd have to recruit your regiments from a single defined area, for one thing, and station the regimental depot in that area. You'd have some transfers, because of men moving to other areas. It could get complicated.

Not for Bread Alone

As one officer writes, "Anything human would be bound to be. But it would retain that precious feeling of mutual confidence that makes men fight. It would make the combat arms feel that the Army considered them important, and worth some trouble. . . . Men, and especially soldiers, don't live or die for bread alone."

Maybe it's just "the Army of a dream" that I'm writing about. But I wish we had an army like that.

The foundation of our system of discipline is the same as the very foundation of our system of government—the preservation of the dignity of the individual.

General J. Lawton Collins

JOINT AIRBORNE OPERATIONS

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The views expressed in this article are the author's and are not necessarily those of the Department of the Army or the Command and General Staff College.—The Editor.

WHY is it that a small, but highly vocal, minority of the United States Army is constantly demanding an increase in our airborne capability? To answer this question completely, it is essential that our thinking be projected into the future to determine the advisability of employing ground forces in airborne operations in future wars.

The *Dictionary of United States Army Terms*, SR 320-5-1, dated as far back as August 1950, defines an airborne operation as one "involving the movement of armed forces by air into an objective area for ground combat." Nowhere in the definition is it stated or implied that an airborne operation is accomplished only by parachute elements. A great many people in the armed services have failed to grasp the salient factor that the ground phase of a joint airborne operation can be originated and executed by any combat ground force unit—exclusive, of course, of the armored unit.

For projected thinking in any field it is desirable, where possible, to proceed from the known to the unknown. Therefore, to understand the future requirement for air movement of combat ground forces, it is necessary first to examine past airborne operations to determine the value of airborne forces in World War II.

Historical Background

During that war there were six major airborne operations launched by the Germans or the allies. The two by the Germans were the blitz on the Low Countries in 1940, and the conquest of Crete in 1941.

In the four major allied airborne operations, United States troops constituted the majority of airborne forces involved. These allied operations were:

1. Allied airborne operations in Sicily (1943).
2. Airborne phase of the Normandy invasion (1944).
3. Operation *Market* in Holland (1944).
4. Operation *Varsity* in Germany (1945).

It is true there were several other airborne operations in both the European and Pacific theaters, however, the size of the force committed or the results attained were not of major importance to the theater as a whole.

Decisive Operations

Objective study of these six airborne operations will make it difficult to rate any of them as decisive in accomplishment of the over-all theater mission. The only airborne operation that could possibly be

A real and continuous threat to a numerically superior enemy can be obtained through intratheater mobility. Such mobility can be achieved through prior joint planning and training of Army and Air Force units

termed as decisive in its own right was the blitz of the Low Countries by German airborne elements. Even in this operation the terror generated by indiscriminate bombing of defenseless cities may have contributed decisively to the capitulation of the governments concerned.

The Crete invasion by Geman parachute and glider forces has long been hailed by many parachute enthusiasts as the most decisive airborne operation. Here, again, was a failure to understand just what the decisive factor was in producing victory for the Nazi invader. Victory in the invasion of Crete was made possible by the success of the German tactical air arm in neutralizing the British fleet in that area of the Mediterranean. When it was no longer possible for the island defenders to be reinforced or supported by naval action, their defeat was merely a matter of time. The conquest, probably, could have been successfully culminated by a surface invasion just as easily, and certainly more economically than by an airborne assault.

The airborne effort of the Normandy invasion did contribute to the initial success of the operation. However, there is nothing to indicate that the invasion would have failed without the contribution of the airborne forces. Objective study then of World War II airborne operations makes it difficult for the honest researcher to rate any of them as decisive in the successful accomplishment of any campaign or over-all theater mission.

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Since airborne operations did not play a decisive role in the last war, it is strange that certain members of the Army continue to advocate for even greater employment of airborne forces in future operations and additional procurement of transport aircraft in sufficient quantity to provide a simultaneous lift for three airborne or infantry divisions. This reaction is appropriate when we consider the economic impact of such a force. The only logical manner by which this can be explained is to examine the manner in which the United States and her allies will conduct a future war, and the tactics of our most probable enemy in the foreseeable future.

A Future War

Our planners have indicated that any major war with the Soviet Union will be conducted in three phases.

The first phase is expected to be a defensive phase involving meeting and slowing the initial Communist advance; movement of the allied ground forces to selected defensive positions in an effort to deny Western Europe to the Communist armies; and stabilization of the battle on these positions.

The second phase will consist of a transition period in which our air forces must gain and maintain a favorable air situation over the Communist air arm. The ground forces must also achieve a build-up of forces and matériel during this transitory phase which will permit the execution of the third and final phase.

The third phase will consist of strategic offensive operations which will produce the expulsion of Communist armies from major eastern European countries.

A study of Soviet tactics in World War II indicates that they are most reluctant to launch an offensive with less than an eight to one superiority of forces in the contemplated area of attack. A 3-division lift will permit the allied thea-

ter commander to shift up to six airborne or infantry divisions to any point in Europe behind the line of contact within a period of from 24 to 72 hours. This capability coupled with tactical employment of area neutralizing weapons will provide an offset to the difference in numerical strength between allied and Soviet ground forces at any point where a penetration of our positions is attempted.

To achieve such flexibility, the theater air and ground forces will of a necessity be required to work and train together closely. Because our North Atlantic Treaty Organization concept requires the retardation and eventual halt of both Communist ground and air forces, we cannot afford to concentrate on the air war to the extent that we might lose the ground war. Such an eventuality could well mean that the Communists would achieve their imperialistic aims without complete victory in a global conflict. Their aim is not to control the air over Western Europe, but rather to control the vast industrial and economic complex of that portion of the free world.

This, of course, presages a gigantic job for both air and ground forces. Just as important is the fact that neither the tactical air arm nor the ground forces can survive on the Continent without the other. Unless a ground line of contact is maintained as far to the east as possible, the theater air forces will be unable to remain within effective striking distance of vital Communist targets. To maintain such a line of contact the ground forces must receive adequate close air support in the all-inclusive sense during the three strategic phases of the war.

It is realized that a great many proponents of air power believe that any future war can be won by deep penetration bombings in a relatively short period of time thereby eliminating any large need for the tactical air arm or ground forces. This concept is not accepted by our present planners. The current mission of NATO and the concept of operations clearly establishes the need for theater air and ground forces on the continent.

More Air Transport

If the facts outlined above are accepted, it is possible to examine further the statement that the Army must have access to more air transport than that which is currently planned or available. The flexibility for ground forces provided by air transport is an Army requirement which must be met. This requirement must be met within the immediate future. Current plans to provide a greater air transport capability for the Army from 12 to 18 months after the outbreak of hostilities are not satisfactory. If the next war is to be won within a reasonable period of time, the outcome will be decided during the strategic defensive phase when we must survive the Sunday punch of the Communists. Success in the transitory and offensive phases will merely be the culmination of the conflict.

Outstanding in World War II were the paramount roles played by both armor and air power. However, the vast majority of our military leaders during the period 1917-37 refused, or were unable, to grasp the fact that not only had the principle of movement, as evidenced by the tank, again become paramount in ground warfare, but that we were now also compelled to wage major warfare in a new sphere—the air. Here was evidence of the failure to apply technological advances resulting from World War I to future concept and to the principles of war.

At present, there is a somewhat similar tendency to fail to consider the potential of airborne operations in a future war. Weapons and vehicles weigh more today than World War II models, lessening their facility for air-transportability. Similarly, responsible individuals believe that adequate air transport for ground forces will

not be needed before 12 to 18 months after an outbreak of hostilities. One must remember that without immediate and rapid air mobility for ground forces, Soviet hordes could overrun Western Europe in less than a year. Following along this line, NATO has apparently failed to plan for airborne operations during the strategic defensive phase of any future European conflict. Finally, Air Force planners have failed to accept the requirement for a realistic numerical balance between combat and transport aircraft. They forget that the Air Force has other responsibilities in addition to operating combat aircraft.

Operation *Market*

Regardless of the fact that none of the past airborne operations were in themselves decisive in winning any major campaign, it is believed that the potential for strategic success through airborne operations was clearly established in the last war. At least one airborne operation—had it been properly planned and pursued with a strategic concept—not only would have been decisive in a campaign, but may well have been the decisive component in producing the defeat of Germany in 1944. This was the Holland operation known as *Market-Garden* (*Market* being the code name given the airborne phase of the operation).

In addition to faulty intelligence, the violation of the principle of mass contributed heavily to the strategic failure of the operation. The 1,544 troop carrier aircraft and 491 gliders were sufficient to lift only two-thirds of the 101st and 82d Airborne Divisions, and one-half of the 1st British Airborne Division. Although the two United States divisions were able to establish and maintain a corridor through which the ground thrust could move, the 1st British Airborne Division, committed at half strength, was never able to secure the Rhine bridges so necessary to the success of the operation. Had sufficient aircraft been available to commit the British at full strength to seize and secure the Rhine bridges, undoubtedly we would have been able to turn the German north flank and sweep across the north German plains almost unopposed. In other words, we would have met the Soviet hordes east of Warsaw instead of on the Elbe.

This operation—which was a strategic failure—is cited merely to point out the tremendous strategic potential of airborne operations if they are properly conceived and conducted. Let us learn from our failures.

It is not the intent here to give the impression that the military establishment is completely hide-bound and unable to accept new ideas. No organization as large as our National Military Establishment can afford to accept every new idea at its face value. As in the medical profession, we must make haste slowly and approach every panacea with a critical eye. The point is that a study of the airborne operations of the last war will indicate that airborne and air-transported forces will play a decisive role in the next war just as the tank and airplane did in World War II and that they will continue to do so in the future. To overcome the numerical superiority of the Soviets, our ground forces must remain shifty and light on their feet.

Modern Warfare

Modern warfare encompasses four major spheres—the economic, the political, the psychological, and the military. Today our military concept must be global also. If we accept this global concept, we must then accept the requirement for inter-theater mobility of ground forces. In other words, we must be capable of moving our forces from the Zone of Interior to any theater and from one oversea theater to another within a very short time.

Today the Communists have established the Soviet ideological empire over one-quarter of the land surface of the globe, and the Soviet controls completely over one-third of the world's inhabitants. Therefore, it is essential that our ground forces be provided the means to move rapidly to any part of the globe where they are needed. As long as our potential enemy is able to maintain the political offensive, we cannot depend upon normal means of surface transport to provide the global mobility required. Surface transportation is too slow and too vulnerable to sabotage. Communist inspired dock strikes, perhaps not during war but certainly during an unsettled period, could seriously delay the global movement of troops sufficiently to be disastrous to our national objectives. Submarine and mine warfare also will seriously hamper naval transport in initial stages of a major war.

It is not intended to imply that we must move ground forces to every threatened point on the globe. However, there will be instances that require the capabilities peculiar to ground forces rather than those inherent to our air or naval arm. In other words, our "fire department" must be prepared to deal with more than one type of conflagration.

Intratheater Mobility

Initially the allies will be unable to compete numerically with Soviet ground forces. For this reason, we must offset the numerical differential between Soviet and allied ground forces by achieving a greater flexibility through superior mobility. As indicated earlier, it has been determined by our planners that we must be able to move several infantry or airborne divisions to any threatened point or points between the North Sea and the Alps within a period of 24 to 72 hours. To do this, four things are required:

1. The necessary transport aircraft to provide a simultaneous lift for a minimum of three infantry or airborne divisions.

2. Three airborne divisions on hand in NATO reserve—not committed to holding a defense sector.

3. An air-transport capability for all ground forces in Europe.

4. Sufficient training for all forces to do the job.

The first three items enumerated need no further discussion. However, the training aspect is of considerable importance. Not only must all United States Army troops be well trained in movement by air, but it is essential that all of our allies have the same capability. For example, if all troops on the Continent were heavily engaged along the west bank of the Rhine and a serious threat developed in the southern defense sector, it would be necessary to move reserves from Norway to the threatened area. Again, surface transport in such a situation is too slow. This need for training applies not only to the ground forces, but is a very heavy responsibility of the Air Force as well.

Once these four aims have been attained, the theater commander will have a flexibility for his ground forces that is similar to the flexibility inherent to his theater air force. The theater reserves can be kept well back and dispersed. They can be moved rapidly to any point on the Continent when they are needed. Troops can be marshalled from widely dispersed airfields and delivered in the vicinity of the objective areas on a schedule that will preclude premature massing of troops and matériel, thereby gaining the maximum of passive defense against atomic weapons.

A United States or allied theater commander who has the capability of launching a 3-airborne division assault in a simultaneous lift, or who can shift sizable reserves rapidly to any place within the combat radius of his transport air-

craft, will pose a serious offensive threat to the enemy commander. The enemy commander will thus be forced to withhold a sizable portion of his forces well back and in numerous locations in reserve to counter the airborne threat.

No modern military machine, such as the Soviet ground forces, can launch a major offensive without a logistical build-up. At the outbreak of hostilities or any time during the conflict, it is within the capabilities of our combat intelligence agencies to inform us concerning where an enemy is making such a build-up. Once this is determined, the United States theater commander can adopt one of two courses of action. He can, at the most propitious time, either move his forces to one flank of the threatened enemy thrust, thereby eluding the sledge hammer blow, and launch a counteroffensive against the hostile flank or he can reinforce the threatened area with air-transported infantry or airborne divisions from less active areas. He can do this only if his theater has sufficient airlift capability—the minimum is a simultaneous 3-division lift.

Air Superiority

The question of how we are going to operate transport aircraft in a theater in which we do not have initial air superiority is of course of prime concern. The Type Field Army now has 923 organic light aircraft of rotary and fixed wing type, and they expect to operate these aircraft as long as ground troops are committed. It is admitted that these aircraft can probably operate safer without air superiority than the more cumbersome transport aircraft. However, troop carrier aircraft can operate under similar conditions without unacceptable losses or without constant and excessive demands on combat aircraft for escort, if their employment is properly planned. We can do this by utilizing night operations to the maximum, routing troop carrier serials back beyond the combat radius of enemy fighter and fighter-bomber aircraft and providing escort aircraft incidental to other missions. To do this, the three air tasks—air superiority, interdiction, and close support—must be closely tied in with aerial logistic operations. This places a tremendous responsibility on the Air Force. However, all of these tasks can be accomplished if the inherent flexibility of the air arm is utilized. No subdivision of Tactical Air Command can be permitted to operate semi-independently. All aspects of the air effort and the ground effort must be thoroughly co-ordinated at all levels. This will call for a considerable amount of prior joint planning. Such planning should be going on now and should be kept current as an essential item to our over-all war plans.

Joint Planning

At the present time a minimum period of from 3 to 5 days is required for the planning phase of an airborne operation in combat. This time factor is required in order to permit the necessary detailed operational planning and marshalling of ground and air force units. This is entirely too long. The more time required to accomplish the preparatory phase of an airborne operation, the more we reduce the advantages gained from air-transported ground forces.

Airborne Planning Group

If we are to gain the maximum benefits of airborne operations, their employment must be a real and constant threat to the enemy. This means airborne forces must be used often and in an airborne role. To do this and to gain the maximum from airborne operations, the execution of the operation must take place in a matter of hours following the decision to employ such forces. This can only be done by having an airborne operations planning group in the G3 section of the theater command. The

primary job of this airborne planning group will be to integrate plans for employment of airborne forces into the overall operational plans of the theater. As soon as it has been decided to launch an airborne operation, the Army and Air Force units concerned should receive in one package all detailed plans—intelligence and other necessary information—so that the only requirement for these commanders is to marshal their respective forces, brief them, and launch the operation. While this is rather easily said, it will require continuous prior joint planning. At all times the theater airborne planning section must know the exact operational, logistical, and personnel status of air and ground units that can be employed in an airborne operation. In other words, the planners must know the amount of time which will be required to assemble air and ground units at the time and place needed, and the exact state of combat readiness of the units concerned.

There is one other essential required if we are to reduce the preparatory phase of an airborne operation from days to hours —standing operating procedure (SOP). By employment of a good SOP that is actually a working procedure, preparations for an operation can be accomplished concurrently at all levels of command concerned. For example, each airborne and infantry division should have on hand loading tables for various types of missions. For a mission that has an emergency airfield construction requirement within the objective area, a different loading plan would be utilized than in an operation without such a requirement. This requirement for an SOP, of course, applies to Air Force units as well as to the ground force.

Training

What has been said about planning thus far will gain us nothing if we do not have the ability to implement our plans. Our only means of ensuring that plans for airborne operations will be properly executed is through constant and realistic joint training. At the present time there is a need for the establishment of a joint maneuver headquarters that will have authority to assemble elements of all three services for training operations. Continued reliance upon the present system of planning and executing joint airborne training operations as now exists between the Tactical Air Command and Office, Chief Army Field Forces involves the continuation of a system which trains no one above the grade of company or flight commander effectively. If we are ever to utilize the capability of air transport for ground forces to the maximum, we must train to the point where an airborne operation can be executed in a matter of hours and not days. Today, the procedure for planning a joint airborne training exercise requires from 9 to 12 months during which a great portion of the time is consumed in arrangements between the Tactical Air Command and the Office, Chief Army Field Forces. Personnel who are to participate in one of these planned exercises, particularly those at regimental combat team or troop carrier squadron level or higher, are always able to diagnose the entire operation. This creates a false training situation that may have disastrous results in combat.

We should consider our units to be in an unsatisfactory state of training unless they can be on the manuever objective area several hundred miles away within 24 to 36 hours after the movement orders have been received by the airborne unit commander, the troop carrier commander, and any other unit commanders concerned with the operation.

Joint training cannot be satisfactorily accomplished within the Zone of Interior until a joint planning staff is established that will have irrefutable authority to plan, direct, and supervise forces concerned with joint training operations. In

the interest of economy of personnel this joint staff could consist of the Commanding General, Tactical Air Command; Chief, Army Field Forces; and the Commander, Atlantic Fleet. Chairmanship of this staff should rotate yearly. Had such a training establishment been in effect a few years prior to 1941, there is little likelihood that the Philippine Islands or Wake Island would have been the disasters they were.

Government Subsidization

A need for a sizable air transport force has been expressed previously. In view of the fact that we cannot have all we would like in the line of combat and transport aircraft, what is the best combination we can affect to accomplish our national objectives? This is an important question and one that must be solved at the top level of our military establishment. However, there is a means by which we can acquire sufficient air transport for most of our intratheater requirement. This can be done by formation of a government subsidized civil air transport fleet.

At the present time, we subsidize beans, butter, and bacon in order that minority groups can maintain a better way of life. It appears that it is time we did a little subsidizing in the interest of our national defense.

A subsidized civil air transport fleet, comprised primarily of transport aircraft of the *C-130* type, would relieve the Air Force of a big burden in providing air transport for the ground forces. The amount of subsidization should be rigidly controlled and should be governed so as to compel the civil transport concerns to be as self-supporting as possible.

Because of government subsidization, this civil transport fleet can be Federally controlled to a considerable extent. Therefore, a part of the contract should require all operating personnel—pilots and maintenance personnel—to be a part of the active Air Force Reserve, subject to call to active duty within 24 hours. Pilots should be required to maintain proficiency in such things as low level navigation and formation flying. By requiring all operating personnel to be members of the active reserve, we could be assured that our transport fleet would not be subject to Communist inspired strikes and transport aircraft would be readily available during critical periods short of actual war. There would be no reason then to pay absurd salaries to civilian pilots who fly into a combat zone, such as we do now for personnel of the Merchant Marine who draw—in addition to high salaries—such things as submarine and mine pay.

Of course, such a plan would raise many points of discussion. What effect would a subsidized air transport fleet have on the railroads? Would it not—partially at least—disrupt normal communications? Would it not provide easy money from the taxpayers for a few individuals? Such questions as these must be answered, or ignored, as the case may be, at the highest political level. The problem of sufficient air transport for the ground forces is going to be with us for a long time. It must be solved in some manner. This is an air age, and the Army must take advantage of it. We cannot conduct our everyday civilian business at the speed of the airplane and expect the ground forces to accomplish their assigned mission at the speed of the liberty ship and 2½-ton truck.

AIR RESCUE SERVICE

THE Air Rescue Service (ARS) is one of the most dramatic organizations in the Military Air Transport Service (MATS). The job of ARS is to provide world-wide air rescue service for all activities of the United States Air Force. Included in the ARS mission are rescue facilities available on request to other military and civil aviation of the United States and foreign countries. These facilities are in constant operational readiness for deployment to any region of the globe where they may be required.

Today, ARS has grown to 12 groups, each of which equals a normal Air Force group in size. Each rescue group normally has three to five squadrons. Each squadron is equipped to provide the best possible rescue coverage for the area mission requirements. One ARS squadron is normally based at group headquarters and the other squadrons of the unit may be stationed hundreds of miles away. These Air Rescue squadrons are located in such strategic locations as: Panama; Okinawa; Japan; Korea; Labrador; the Azores; England; Germany; Alaska; Dhahran; Saudi Arabia; and Hawaii—in the United States, at Denver, Colorado, and Westover AFB, Massachusetts. You would have to fly a long way in strange directions before you ran out of reach of one of ARS' "mission of mercy" bases.

Air search and rescue coverage for the vast ocean area around Japan and Korea in support of United Nations combat operations and air transport arteries was provided by Air Rescue Service. Rescue aircraft not only orbited in strategic localities of the Korean theater to rescue or lead home disabled aircrews, but they also rescued pilots forced down at sea behind enemy lines.

ARS helicopters, often operating under fire, have evacuated or rescued hundreds of United Nations military personnel from front lines in Korea and in daring operations behind enemy lines. Many seriously wounded soldiers have been evacuated rapidly to field hospitals in rear areas of the combat zone.

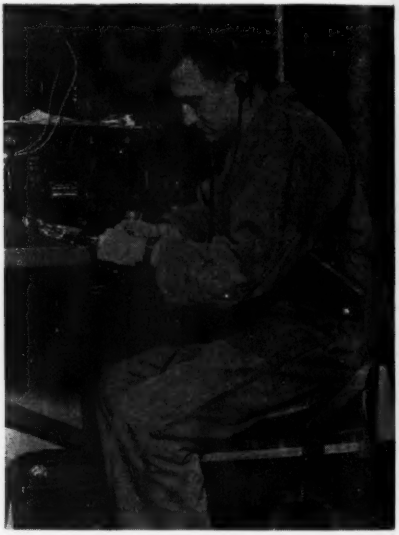
ARS has a rescue team consisting of medical and survival personnel who are ready to parachute at any time to the scene of a crash which might otherwise be inaccessible. In addition, these same trained rescue teams are used for overland operations with such equipment as caterpillar weasels, jeeps, and radio trailers.

In addition to covering planned bomber missions, ARS planes serve as airborne radio beacons, orbiting at fixed positions and have, upon occasion, acted as flying operations control towers at forward landing strips.

Aircraft especially modified for ARS rescue operations include *SB-29s* and *SB-17s* with airborne lifeboats that can be dropped to survivors downed at sea; *SA-16* triphibians and *C-47* personnel and equipment transports; and *H-19* and *H-5* helicopters.

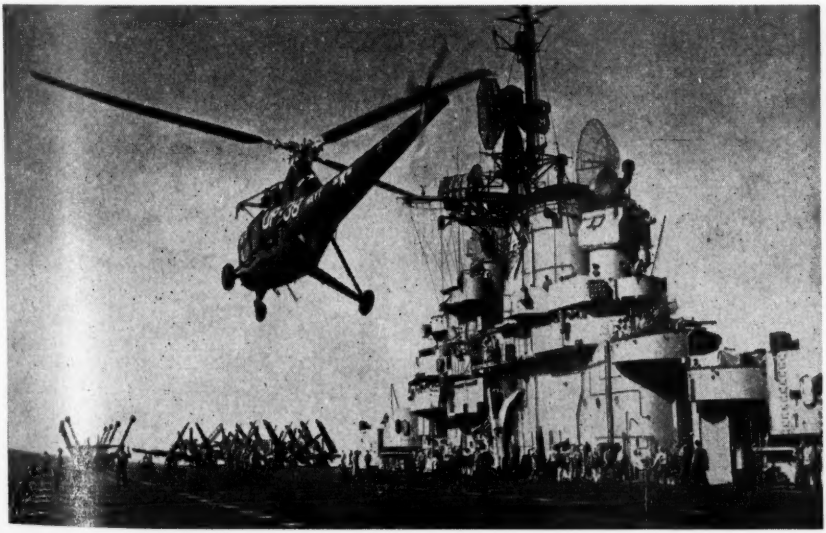
Air Rescue Service many times flies humanitarian missions throughout the world. Whatever the occasion or wherever the location, ARS strives to live up to its motto: "That Others May Live."

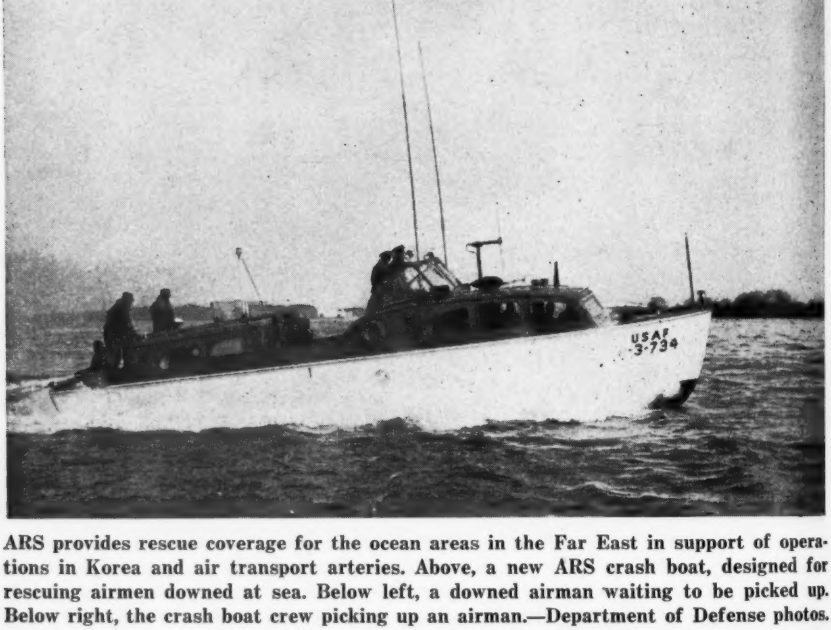
The Air Rescue Service's land, sea, and air lifesaving facilities are in constant readiness for rapid deployment to any region of the world where they may be required to carry out their humanitarian mission



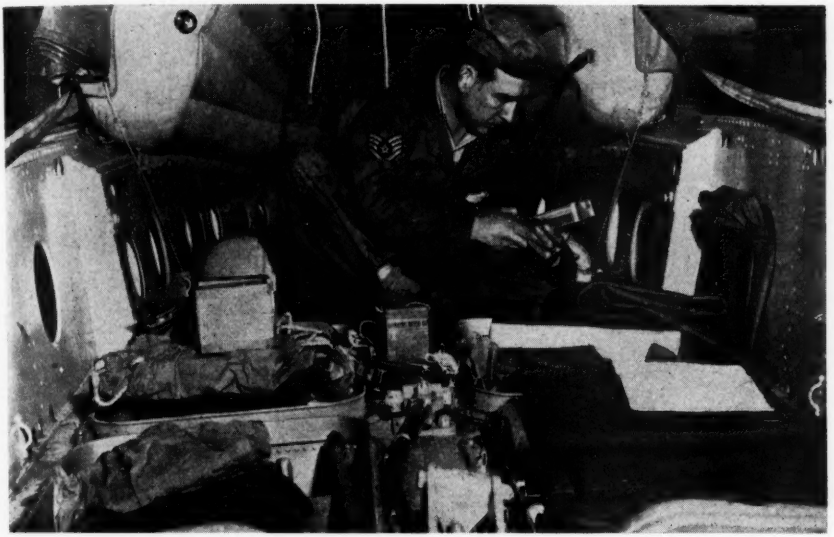
ARS provides air rescue service for all activities of the Air Force. Above left, an ARS officer briefing a pilot for a search mission. Above right, an ARS radioman listening for SOS signals from airmen forced down over the Sea of Japan. Below, a helicopter evacuating a survivor from an inaccessible area.—Department of Defense photos.

Air Rescue Service's helicopters, operating under fire, have evacuated or rescued hundreds of United Nations personnel from front lines and pilots forced down at sea behind enemy lines. Above, a casualty in Korea being evacuated by helicopter. Below, a helicopter landing on a carrier after a rescue mission.—Department of Defense photos.

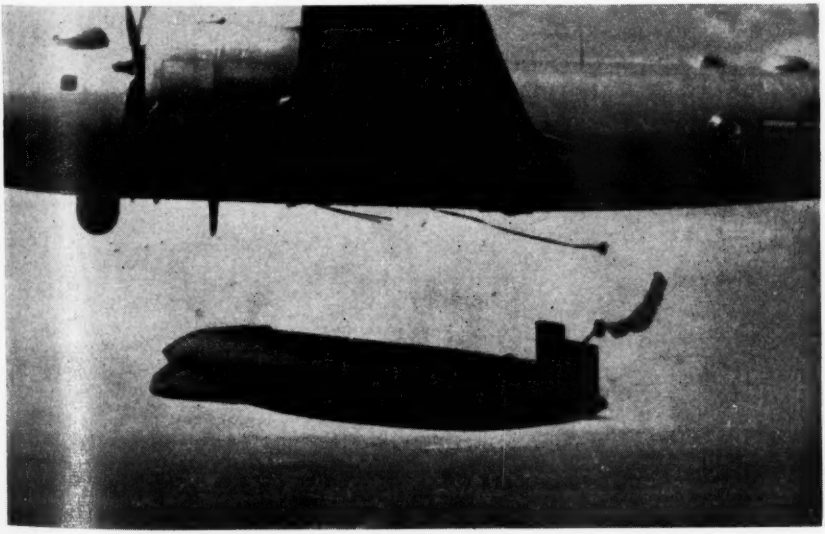




ARS provides rescue coverage for the ocean areas in the Far East in support of operations in Korea and air transport arteries. Above, a new ARS crash boat, designed for rescuing airmen downed at sea. Below left, a downed airman waiting to be picked up. Below right, the crash boat crew picking up an airman.—Department of Defense photos.



Air Rescue Service's *SB-29* and *SB-17* aircraft are especially modified for ARS rescue operations, carrying equipped, all-metal lifeboats that can be dropped to survivors downed at sea. Above, an ARS airman checking the survival gear aboard an airborne-lifeboat. Below, the all-metal lifeboat being dropped from a *SB-29*.—Department of Defense photos.



Whatever the occasion or wherever the location, Air Rescue Service strives to live up to its motto: "That Others May Live." Above, a rescue team in Alaska preparing to deliver parcels to isolated outposts. Below, an air rescue paramedic comforting a simulated crash victim at ARS' Jungle Survival School.—Department of Defense photos.

Only the Well-Guided Will Succeed!

Captain Paul B. Nelson, Jr., *Infantry*

The views expressed in this article are the author's and are not necessarily those of the Department of the Army or the Command and General Staff College.—The Editor.

MEDIOCRE combat intelligence is now more often the rule than the exception. And why is this the case? Because too few intelligence officers really understand their jobs. Too many expect raw information to come knocking at their door. Instead of aggressively directing their units in searchings for information, they sit placidly awaiting the fruition of stereotyped and unimaginative "collection plans," —plans frequently of no real value to anyone.

This sterile and listless approach to the problem just will not work!

Dynamic Effort

A good intelligence collection effort is a dynamic thing, alive and responsive to the needs of the commander. Careful planning gives it meaning, vigorous execution produces substance, and close supervision keeps it related to the current needs of the command. Continuous direction or guidance is called for, because only the well-guided will succeed.

Essential Steps

There are essentially five steps involved in the direction of an intelligence collection effort:

1. Formulation of Essential Elements of Information (EEI).
2. Establishment of collection requirements.
3. Assignment of collection missions.
4. Issuance of orders and requests.
5. Supervision.

Let us consider each one of these five steps in turn.

Formulation of EEI

The first thing we will usually have to do in a new situation is give the commander an intelligence estimate. This initial estimate probably will be a quite general one in the absence of detailed enemy information related to the tentative new plan. Often it will include a whole fistful of capabilities about which so little is known that only a fool would try to rank them as to order of probable adoption.

It is difficult for a commander to make his best decision when the enemy picture is not reasonably clear. We must, therefore, first reduce these many possible capabilities to a smaller number of somewhat more probable ones. Then each of the more probable ones can be examined closely in order to determine which could most seriously affect the accomplishment of our mission. The implementation of any one of this latter group will dictate, to a large

A good intelligence collection effort is a very dynamic thing. Careful planning gives it meaning; vigorous execution produces substance; and close supervision keeps it related to the current needs of the command

extent, the moves and countermoves of our own commander. Therefore, information concerning each is essential for sound planning. Accordingly, these particular capabilities form the basis for a number of tentative EEI.

Next, we must decide what information is needed in order to avoid tactical surprise. To do this we study the disposition of the opposing forces, the terrain, and the demands of the tentative plan; and our conclusion as to what is needed here gives us more entries on our list of tentative EEI.

But keep this point in mind. While we do want our EEI to provide some insurance against our command's being surprised, *too much insurance can be self-defeating.* We can spend so much time looking for tricky or unusual enemy maneuvers that we lose all sight of our main job: *providing current enemy information to the commander.* There are times when we must take calculated risks by disregarding some questions about the enemy that we might normally consider. This is done when all efforts are to be concentrated on a few critically important questions that *must* be answered.

Future Operations

Another consideration is the necessity for getting your agencies active in time to provide information when you need it for future operations.

Consider this situation. Our division is to advance to Phase Line RED. Once we have given the commander all the information he needs to plan his attack, we cannot just sit back and relax—we have got to keep the collection ball rolling. We must ensure a continuing flow of information up to and after the accomplishment of this advance. If we do not plan ahead of time, each subordinate unit might assume that the other guy is responsible for supplying the needed information. Our commander could then find himself with his division astride Phase Line RED, ready to continue the attack, but without the information needed to plan this attack.

Adjacent Units

A final consideration are those information needs of higher, lower, and adjacent units.

Each tactical level of command will normally be assigned collection missions by the next higher headquarters, and adjacent and lower units will frequently request information that you do not have yet. These missions and requests must all be considered when drawing up the list of tentative EEI.

So long as those missions assigned by higher headquarters are compatible with our tactical mission and capabilities (as they should be), few problems will be encountered in fitting them into our plan. The requests from lower and adjacent units, however, may be a bit more difficult to handle. Judgment has to be used when deciding which can and which cannot be met, but we should do all that is reasonable to obtain for them what they have requested.

Priority Requirements

After we complete our list of tentative EEI, we are able to work up a mental or written list of up-to-date high priority intelligence requirements which is submitted to the commander for his consideration. He will usually check them, making

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such additions, modifications, and deletions as are called for, and then approve the modified list as the essential elements of information needed for this operation. These are then usually published (fragmentary orders, paragraph 3x of Operation Order, paragraph 2 of Intelligence Annex) for the information of the command.

But hold on a minute. Does this mean that the EEI, once published, are by themselves adequate guides for our collecting agencies? Does this mean that we can now simply sit back and wait for them to produce? Of course not!

The announcement of the EEI to the command serves just one principal purpose: *to acquaint the command with the over-all current intelligence needs of the commander.* The jobs for the subordinate units and the specific information expected from each will usually be announced at another time: when we assign collection missions for the operation.

Why, then, tell them about all that is required, when they are each going to deal with just parts?

There are at least two reasons. First, if each unit knows the over-all needs of the commander, it should then be able to recognize better the importance of any related items of information that it picks up while accomplishing its own assigned mission. Second, our various agencies will be able to understand better their respective missions if they can see how these fit into our whole collection program.

Once our EEI have been approved, we are ready to begin preparing our collection plan. The next three steps in the direction of the collection effort are the phases involved in this plan.

Collection Requirements

While the first of these three steps is relatively easy, it is not to be considered unimportant. It is during this phase of planning that we break our own intelligence needs, the approved EEI, into bite-size chunks that our agencies can handle—collection requirements, if you will.

One method of collection that might be used would involve our learning everything we could about the enemy. Then, after all this information was accumulated, we could examine and sift it in detail in order to decide exactly what he is up to. This system would work fine if the number of agencies were unlimited and time not a factor.

A Hypothetical Case

This is never the case! Time is always a critical factor in the production of combat intelligence, and we never have an excess of agencies. Some other method is obviously called for.

Here is a system that will work.

Let us assume that our first EEI is a typical one: Will the enemy defend his present positions on Hill 101? What pieces of information will answer this question?

If we observe his troops preparing trenches, pillboxes, antitank obstacles, and barbed wire fences, or similar obstacles, on or around Hill 101, we will probably conclude that he is planning to defend it. These are examples of positive actions that suggest his adoption of a defensive course of action.

If, in addition, photo and visual reconnaissance of his rear areas disclosed no activity suggesting a withdrawal (and such activity usually precedes actual withdrawals), our conclusion would be strengthened even more. This is an example of useful negative information.

However, if, instead of all this, continued observation of the hill revealed no special defensive preparations and our air observation posts reported scattered withdrawals—what then?

This negative and positive information would suggest the rejection of a full-fledged defense. Maybe he does plan to fight a delaying or determined rear guard

action, but apparently that will be all. Even such an incomplete conclusion will help our commander, because he can then formulate a plan tailored to this partially clarified situation instead of one tailored to none.

Significant Indications

The specific information to be sought, then, will usually be related to significant indications. And what are indications? They have been defined as "those evidences of enemy activities, either positive or negative, that may point toward the adoption or rejection of a particular course of action by the enemy."

Here is where our intelligence people must start using their heads. Of all the things a good intelligence officer must know and understand about combat, the following three are of primary importance when he is trying to determine just which indications will really be significant:

1. An understanding of terrain and the use made of it by the enemy.

2. A thorough knowledge of the organization, equipment, and tactical and logistical methods of the enemy.

3. An appreciation of the importance of order of battle intelligence.

In our given situation, we would probably conclude that the really significant indications relating to the announced EEI would be those dealing with defensive installations or activity on or around Hill 101. This conclusion would be based on a knowledge of terrain and the enemy's tactical doctrine. An examination of Hill 101 revealed that it had no inherent defensive strength; and this fact, coupled with the enemy's habit of fortifying that type terrain when holding it, suggested that the appearance of defensive installations or activity would indicate his decision to hold it. And our knowledge of his tactical methods told us that he did not normally defend a position vigorously without first improving its natural defenses. Again, the preparation of defensive works would suggest an intent to defend.

Now what if we later identified the enemy commander as Lieutenant Colonel Chow Yu, and order of battle intelligence revealed him to be a man who favored the mobile-type defense which is backed up by a strong counterattacking reserve?

We would then immediately revise our original conclusion and begin at once to pay more attention to possible assembly areas. The lack of defensive activity on the hill in this case would be far less significant than usual.

Judgment is Key Asset

This should help to explain why there is no fixed list of indications appropriate to *all* situations. General and special *guides* for selecting indications are available, to be sure, but knowledge and good judgment are the really important assets when one is trying to decide the key information he must get.

A Typical Indication

Consider just one typical indication: the location of enemy artillery. The general guide for the selection of indications listed in Field Manual 30-5, *Combat Intelligence*, notes that a typical defense indication is the disposing of artillery in depth. Conversely, it notes that the movement well forward usually suggests an attack.

In September 1951, however, one United States unit in Korea published a special guide for selecting indications which noted that the Korean enemy did not then usually employ artillery in the attack although he did move it well forward and use it in the defense!

There was a reasonable explanation for this unusual switch. While the Chinese and North Korean rules for the employment of artillery closely resemble our own, they had modified them to fit their situation: one involving insufficient artillery and en-

emy air superiority. When their over-all situation again becomes more normal from their point of view, they will probably once again use their artillery just as we do. Meanwhile, our intelligence people must keep on their toes.

After the significant indications have been determined and these and other matters of intelligence concern pinned figuratively to particular locations on the ground through the assignment of map co-ordinates or other designated data, we can call them collection requirements. These will provide the basis for the next step in the preparation of the collection plan: the assignment of collection missions to our collecting agencies.

Collection Assignment

Good collection missions are characterized by four features; they are:

1. Specific.
2. Compatible with the tactical mission of the unit concerned.
3. Concerned with information of a type the unit can get.
4. Pertinent to the situation at hand.

We want them to be specific so that it will be easier for our agencies to understand what we want. They should not be forced to analyze our requests in attempts to decide what we are after.

Compatibility with tactical missions is necessary for two reasons: first, to make the accomplishment of the collection mission more probable; and, second, to reassure the troops of our awareness of the demands of these tactical missions.

The third characteristic of a good collection mission goes hand-in-glove with compatibility. Requests for information of a kind our units can obtain not only better our chances of getting it, but also increase the troops' confidence in intelligence. There are few moves which create doubts faster than outlandish requests for information that is completely beyond normal expectations or the capabilities of a unit involved.

While pertinence to the situation at hand is highly desirable, it is not absolutely necessary. There will undoubtedly be times when the information wanted deals with future battles rather than the one being fought. In such cases, however, it is a wise intelligence offijcer who relates his requests to the immediate situation. He might, for example, state that the requested information is needed to plan the continuation of the battle, or to avoid surprise.

Now is this sort of explanation mandatory? No, it is not. Why, then, do we bother? Because it happens to be the smart thing to do! The more our subordinate agencies understand *why* we want this information, the harder they will strive to get it.

Some sort of form will be useful when preparing our plan of collection. One type is described in Field Manual 30-5; but the one illustrated on page 35 of this article is believed to be an improvement, because this form is also an aid to supervision.

After each EEI in the first column, we list the appropriate collection requirements in the second column. Then, considering each of these collection requirements in turn, we proceed to fill in the "Agencies to be Employed" column.

This is done by matching the requirement against each of our collecting agencies and asking ourselves two questions:

1. Is it possible for this agency to obtain this information?
2. Would such a requirement be a logical assignment?

If the answers to both of these questions are "Yes," we make a check in the appropriate sub-column and move on to the next agency to be considered.

After each requirement has been matched against all of the available agencies, we go back to the top of the form again. This time we select the agencies

who will actually be given the job of fulfilling the needs of each requirement; and these final selections are indicated by circling the appropriate checks.

Ask yourself two more questions when making these final selections. First, will the collection requirements already assigned to the agency under consideration allow or permit the assignment of more? There is a limit to the amount that each agency can collect—we must take care that we do not overload it. Second, if the assignment of a requirement to one agency duplicates a previous assignment to another, is this duplication justified? Two or more agencies should be assigned the same requirement only when the information involved is difficult to obtain or of such importance that we must be certain of the facts before we can reach a sound conclusion. The *unnecessary* duplications of effort, then, are what we want to avoid.

Issuance of Orders

The partially-completed collection plan should, at this point, be turned over to the intelligence noncommissioned officer or chief clerk who will supervise the preparation of the necessary messages—the actual writing of these messages can be done by the enlisted clerical assistants—assuming, of course, that they have reached a satisfactory state of training.

Some care should be taken during the drafting of these messages to put related items together in logical sequence and to so describe what we are after that it is perfectly clear to the recipients. And, quite naturally, all letters and numbers should be clearly readable.

Do we use our radios and telephones, also, instead of just written orders and requests? Yes, we do. But we should still write the messages as well. By writing the text ahead of time, we tend to ensure more clearly understood messages which can be transmitted by radio or telephone in a minimum of time. Also, it is advisable to issue written confirmations in cases of this kind. Such confirmations serve both as checks to ensure more accuracy and as reminders of work to be done.

As the individual messages are prepared, checked, and logged out in the appropriate journal, they are turned over to the unit message center for dissemination. When all have been sent out, the collection plan is returned to the desk of either the duty officer or the chief clerk.

Supervision

We have now arrived at the point where the average intelligence officer falls flat on his face. Too many conclude that once they have formulated the EEI, prepared the collection plan, and issued the necessary orders and requests they are finished. Too many think that orders are enough and that supervision is unnecessary. This is certainly not the case. *Supervision is as necessary in intelligence staff work as it is in command.*

The mere issuance of orders or requests is by no means a guarantee that the mission will be accomplished. Nor is there any guarantee that an originally well-conceived plan will continue to be applicable as the situation unfolds. The whole complexion of a situation may change as more information comes in, and immediate modifications or shifts in our collection effort may be required. If we keep tab on what is going on, as we should, we will know when this occurs and be able to take the necessary action.

There are, then, essentially three reasons why we must continually supervise our collection effort:

1. To ensure compliance with our orders.

2. To check incoming information to make sure it is complete and accurate.

3. To keep tab on the situation and the results being produced by our collecting

agencies so as to know when our collection effort needs modification.

The form described above will assist the intelligence officer in performing this called-for supervision. As already noted, the collection plan is returned to either the duty officer or the chief clerk after all necessary messages have been issued. Then, as information comes in, in fulfillment of the various requests already made, checks are placed in the appropriate boxes of the "Information Received" column.

Those already-circled checks in the "Agencies to be Employed" column are now circled again—preferably with a colored pencil—to indicate that answers from those agencies have been received (the use of a blue pencil for positive and a red pencil for negative checks and circles is helpful—so also is the use of a small journal number (J16, J31) besides the colored circle). When an agency reports it was unable to obtain some requested information, a large firm "X" should be superimposed on the original circled check to indicate its cancellation.

This procedure is useful because it enables you at any time to check the progress of your collection effort. You can see at a glance how many and what type of reports dealing with each requirement have been submitted, which requirements are not being satisfied, and which items might merit more attention. If shifts in the collection effort are called for, this fact will become apparent and you will be able to make them.

If you find that one of your agencies is habitually fumbling the ball and too often failing to obtain what you have requested, just hang on to those collection plans that are filled with "we cannot get it" Xs from the unit involved and, when you have enough on hand to make your argument stick, go have a talk with the intelligence headman or commander involved. Find out what the trouble is.

PROPOSED COLLECTION PLAN FORM

ESSENTIAL ELEMENTS OF INFORMATION	COLLECTION REQUIREMENTS	AGENCIES TO BE EMPLOYED										TIME BY WHICH INFORMATION IS TO BE REPORTED	INFORMATION RECEIVED		HAS THE QUESTION BEEN ANSWERED?
		CORPS	RECON. CO.	IPW TEAMS	PI TEAMS	DIV ART.	85th Inf.	86th INF.	87th INF	TANK BN.	DIV AIR.		POSITIVE	NEGATIVE	
1. DEFEND..., HILL 101	a. CONSTRUCTION OF WEAPONS POSITIONS, PERSONNEL SHELTERS, ETC.			⊘	⊘	⊘		⊘		⊘		AS RECEIVED PRIOR TO 222000 AUGUST.			
	b. INSTALLATION OF OBSTACLES (ANTIPERSONNEL AND ANTITANK MINE FIELDS, ROAD BLOCKS, BARBED WIRE, ETC.).			⊘	⊘	✓		⊘		⊘		"			
	c. DIGGING OF COMMUNIATION TRENCHES.				✓	⊘		⊘		⊘		"			
	d. DUMPING OF ENGINEER SUPPLIES OR EQUIPMENT IN VICINITY.	⊘		⊘	⊘	✓				✓		"			
2.	(OTHER COLLECTION REQUIREMENTS)														
3.															

Does he have some good explanation or is he simply letting your commander down? A talk like this should acquaint you with his problems and, perhaps, some of his individual weaknesses as well. If you know these things, you should be able to do something about them. You will continually have to ride your agencies to make sure they are reporting their information properly. Time and again, they will submit unnecessarily incomplete or inaccurate reports. They will describe *groups* instead of *squads* or *platoons; tanks* instead of *medium tanks; artillery fire* instead of *mortar fire.* Constant prodding, persuasion, and even occasional threats are needed in order to maintain accurate and complete reporting of information. *If any subject should be stressed in the intelligence training given to the troops, this is it!*

The last column on our collection plan form "Has the Question been Answered?" is to be used only by the intelligence officer. As the time approaches when a final estimate must be given to the commander, you will usually sit down in front of your situation map with the worksheet and collection plan to get it all in order. After you check what has been done to fulfill each collection requirement, you will be able to decide whether or not the basic question has been answered and, if so, to what extent. An appropriate entry in this last column gives you a means of later checking which questions were answered and which were not. This information might be called for while you are giving your commander your intelligence estimate.

Summary

To reiterate, there are essentially five steps involved in the direction of an intelligence collection effort:

1. Formulation of EEI.
2. Establishment of collection requirements.
3. Assignment of collection missions.
4. Issuance of orders and requests.
5. Supervision.

These steps, properly executed, and sound judgment, properly exercised, will ensure a guided program of collection. It should be remembered that only the well-guided will succeed!

NEXT MONTH

The next issue of the MILITARY REVIEW will feature the article "The Commander's Estimate and General McDowell," by Lieutenant Colonel Thomas O. Blakeney, an instructor at the Command and General Staff College. Colonel Blakeney describes, in detail, General McDowell's actions in the field at Bull Run, applying our present day estimate of the situation to McDowell's problems there.

"The World Strategy of the West," from *The Army Quarterly* (Great Britain), will be included in the "Foreign Military Digests" section of the magazine. This article considers the West's world strategy in the event of a war with the Soviet Union—stressing the strategic qualities and dispositions of the land, sea, and air power of the opposing forces.

Rio Grande Campaign Logistics

Edward Steere

The views expressed in this article are the author's and are not necessarily those of the Department of the Army or the Command and General Staff College.—The Editor.

EVER since the invention of the wheel and the oar, improved methods of carriage have conditioned the execution of strategic designs in time and space. The Rio Grande campaign of 1861-62, although long regarded as an insignificant border foray, offers a valuable case study, vividly illustrating the penalties inflicted for disregard of these logistical determinants. After winning every action, the Confederate invaders forfeited victory to the Federal forces; their flimsy communications with Texas could not compete with those maintained by long-established traffic facilities plying the Santa Fe Trail between Fort Leavenworth, on the Missouri River, and the Rio Grande Valley of New Mexico.

The Secession of Texas

Secession of Texas from the Federal Union on 1 February 1861, revived historic aspirations of the Lone Star State to vast territories in the west. Seizure of Fort Bliss brought its military forces to the southern gateway of New Mexico. Early in August, Brigadier General Henry Hopkins Sibley, Confederate States of America, arrived at El Paso with authority to organize a brigade of Texas Mounted Rifles and occupy the upper Rio Grande Valley. As stated by the General to Major T. T. Tiel, his Chief of Artillery:

> The objective aim and design of the campaign was the conquest of California and as soon as the Confederate army should occupy the Territory of New Mexico, an army of advance would be organized and 'on to San Francisco' would be the watchword.

Glittering prizes beckoned like a mirage across the western desert—gold to buttress an unstable currency and the advantage to Confederate privateers in using commodious anchorages far removed from the reach of Federal naval power.

Confederate Advantages

Superficially, every advantage appeared to be on the side of the Confederates. The Texas border lands had long been a breeding ground for partisan fighters whose horsemanship was matched by address in arms. Memories of the Alamo and San Jacinto stirred their fighting blood. Mobility held the promise of victory over an enemy whose superior numbers were widely dispersed throughout the Territory. The Confederate commander was an enterprising cavalryman, with an inventive turn of mind. In 1856, he patented the Sibley Tent. Adopted by the Army and improved in subsequent years, its basic features persist in successive designs to the present day. Graduated from the United States Military Academy, breveted for conspicuous conduct during the Mexican War, he was commissioned colonel on 13 May 1861, and assigned to command of the 2d

Although the invading Confederate forces won every action in the Rio Grande campaign, the penalty for their disregard of the logistical determinants was the forfeiture of victory to harassed Federal forces

Dragoons. On the same day he resigned the commission and offered his sword to the Confederacy.

General Sibley's confidence was strengthened, perhaps, by the fact that his adversary was an infantry officer of conservative views, holding that fire power was only an adjunct to the bayonet. Moreover, these tactical opinions were not a matter of hearsay. Colonel Edward R. S. Canby, who assumed command of the Military Department of New Mexico during June 1861, was Sibley's brother-in-law, having married the general's sister in happier days of peace.

Upon establishing brigade headquarters at El Paso, General Sibley hoped to complete his preparations and strike up the Rio Grande Valley during September. No effective resistance was anticipated in the valley south of Santa Fe. The El Paso-Santa Fe line, however, could not be secured without possession of Fort Union, a post guarding the eastern gateway to the upper valley. Fort Union, situated on Las Vegas Mesa where the Mountain Route and the Cimarron Trace (Cutoff) of the overland communications system known as the Santa Fe Trail converge and follow a tortuous mountain road through Apache Canyon or Glorieta Pass to Santa Fe, was established in 1851 to serve as the supply depot for all New Mexico and Arizona. Strategically located for such a purpose, and adequately equipped for defense against hostile Indians, the position had never been provided with earthworks and armament to withstand an assault supported by modern siege artillery. In other words, Fort Union was no stronger than the posts in the valley.

Mr. Edward Steere served with the Royal Canadian Horse Artillery in Europe during World War I. He received his Master of Arts degree from the University of Texas and subsequently entered the National Park Service, directing historical projects at the Civil War sites of Antietam and Fredericksburg. He is the author of a monograph on the evolution of the burial policies toward the United States Army's honored dead. He is presently a Department of Defense historian assigned to the Quartermaster General's Office.

Improvident Policy

Despite his initial advantage, Sibley became the victim of a confused and improvident military policy. Urgent claims of the New Mexican invasion force were disregarded in favor of ill-advised projects, such as Stirling Price's foray into Missouri. Meantime, Sibley's Mounted Rifles languished at El Paso, ill-fed, poorly equipped, and ravaged by disease. In November, the brigade commander informed Adjutant General Cooper, Confederate States of America, that he had arrived at Fort Bliss in high hopes of readying his force and "by this date to have it actually employed in the accomplishment of the purpose for which it was raised." On the eve of departure for the field in February 1862, he again reported to Richmond the pitiful condition of his command:

> . . . I find myself at this point . . . with only two regiments and a half, poorly armed, thinly clad, and almost destitute of blankets. The ranks are becoming daily thinned by those two terrible scourges of any army, smallpox and pneumonia. Not a dollar of quartermaster funds was on hand or ever has been.

Federal Countermeasures

Neither the threat of galloping horsemen from the south, nor fear that the native New Mexican population would welcome a liberation army of Texans, unduly disturbed Colonel Canby. With a grasp of large affairs that transcended the narrow province of the tactical officer and penetrated the realm of statesmanship, he advised the headquarters of the Federal Army that:

> . . . any immediate political trouble in the department and in the near future . . . will be contingent upon the action of Missouri, with whom the people of this territory are more intimately con-

nected in their commercial relations and associations than with Texas and the neighboring states of Mexico.

The military situation, however, could not be viewed with equanimity. Numbering about 3,000, Canby's forces were widely distributed in small garrisons to keep the Indians at peace. His military chest was empty; payrolls had fallen from 6 to 18 months in arrears; recent expeditions against Navajos and Comanches had so exhausted organic transport as virtually to immobilize many units; reserve stocks of subsistence, equipage, arms, and ammunition were depleted. Failing delivery of draft animals and critical supplies at Fort Union in the near future, he would be powerless to meet a mobile column striking up through El Paso del Norte.

In August, Canby undertook the dangerous expedient of withdrawing his scattered garrisons in southern New Mexico and Arizona and concentrating them at Fort Craig, a post on the Rio Grande midway between El Paso and Santa Fe. While directing the maneuver that not only abandoned half the area of his command but risked destruction of his forces in detail, he was advised that supplies "in immense amount" were en route to Fort Union. He at once intensified efforts to induct volunteer levies into the Federal service. Arrival of the overland trains would enable him to mobilize an effective field force. His regulars would serve as a mass of maneuver. Two regiments of New Mexican infantry, the first of which was commanded by Kit Carson, promised a fairly reliable reserve. Other volunteer units would either reinforce or relieve regular garrisons in the Indian country. A few might be useful as partisans.

Two Avenues of Invasion

Strategically, there were two avenues of invasion to be watched. One led from El Paso, in the south, where Sibley was mustering his Mounted Rifles. Fort Craig stood across the line of advance from that quarter. The other avenue ran westward along the Canadian River corridor toward Apache Canyon. Fort Union guarded the mountain gorge leading to Santa Fe. Both positions, however, required increased armaments and extensive repairs in order to withstand the shock of a powerfully armed attack.

Early in September, when Sibley hoped to move northward, the earthworks at Fort Craig were nearing completion. Meantime, the old depot on Las Vegas Mesa had been transformed into a modern fortress, with appointments to sustain a protracted siege. A report to The Adjutant General described Fort Union as "better provided with artillery than any other post [in the Territory]." All quarters "were made bombproof."

At the first serious indications of Confederate activity in the south, Canby increased his concentration at Fort Craig to 3,800 troops. The force included 1,100 regulars—11 companies of infantry, 7 of cavalry, and McRae's Battery of Field Artillery—together with Kit Carson's New Mexican regiment, a miscellaneous collection of volunteer companies, and 1,000 unorganized militia. Pending arrival of reinforcements from Colorado and organization of the Second Regiment of New Mexican Volunteers, Canby assigned 780 regulars to Fort Union. Small detachments, aggregating 381 regulars, held Albuquerque and Santa Fe. The balance of the regulars were stationed in the west to overawe the Indians. As tersely stated by the colonel commanding:

> Fort Union and Fort Craig are now strongly occupied, and may be regarded as the initial points for offensive and defensive operations. The headquarters of the First Regiment of New Mexican Volunteers have been established at the former and those of the second will be at the latter, as soon as it can be organized.

Instructions, requiring that the commanding officer of Fort Union keep the

Canadian River corridor under observation and call for cavalry reinforcements if serious trouble arose in that quarter, indicate that Canby was harassed by the responsibility of watching two frontiers. His correspondence with Captain Elmer Otis, commanding the garrison at Fort Wise (formerly Fort Bent), where the Mountain Route crossed the Arkansas River and turned southward toward Las Vegas Mesa, reveals the difficulty of balancing dispositions to meet frontal attack against provision for safeguarding his long line of communications. Plans for replacing four regular companies with volunteer units from Colorado and bringing the regulars to Fort Union were abandoned in favor of a decision to retain both regulars and volunteers at the post on the upper Arkansas. Then the garrison commander at Fort Larned, located on the Arkansas some 200 miles below Fort Wise and near the crossing to the Cimarron Trace, was advised of reports that a special body of Texas troops was being organized for an attack on the overland trains proceeding to New Mexico. Thus the colonel commanding alerted a vast triangular *communications zone*, the vertices of which were dominated by Forts Union, Wise, and Larned. Lacking tactical finesse, Canby compensated for this deficiency by a keen appreciation of logistical and strategic relationships.

Reserve Supplies

Logistical support of tactical operations in the Rio Grande theater presupposed large stocks of reserve supplies at both Fort Union and Fort Craig. Anxiety on this score was allayed early in December when the leading wagons of a group of overland trains rolled into Fort Union. Canby reported that he was able to equip his regulars with the most improved arms, while the volunteers received older models—"all in serviceable condition." The consignment of clothing was good in quality and adequate to all probable needs of his regular force. The supply for volunteer units would be delivered by trains expected daily at the base. Deficiencies in organic transport, it is stated, were partially filled by the purchase of mules sent by private speculators to Santa Fe. Additional droves accompanied the overland trains then approaching Fort Union.

Meantime, Sibley tarried in the south. Aware that time now favored his adversary, he gloomily calculated the advantage he might still retain by striking up the Rio Grande with his depleted force. Decision hinged on a desperate gamble: would Canby's extended communications with Fort Leavenworth stand the strain of meeting an attack from the south?

Santa Fe Communications

Expressed in terms of present-day military parlance, Fort Leavenworth served as a port of embarkation, transshipping supplies across the "prairie ocean" to Canby's base at Fort Union. The transport service between these points was an independent organization, being operated by private contractors who were subject to military authority only to the extent of delivering consignments in accordance with contract specifications. An outgrowth of the Santa Fe trade, its capabilities in the logistic sense are best appreciated by examining the traffic facilities that had been developed during four decades of the commerce of the prairies.

The Santa Fe market was discovered by far-ranging trappers, or "mountain men" who drifted southward into the Rio Grande Valley from Fort Bent, then a frontier trading post at the site on the upper Arkansas River subsequently occupied by Fort Wise. In 1822, after venturing with a pack train to Santa Fe, Captain William Bucknell put his earnings in a string of ox-drawn wagons laden with cotton goods and cutlery. Purposely avoiding the mountain country, he crossed the Arkansas at a point later commanded by Fort Larned

and cut straight across the southwestern prairie to Apache Canyon. Although driven to the dire extremity of drinking water from the intestines of dead buffaloes in crossing the bleak, sun-baked *jornada*, his wagon wheels marked the Cimarron Trace.

During the quarter century following Captain Bucknell's introduction of wheeled transport on the southwestern prairie, the Santa Fe Trail served as an international trade route, delivering in exchange for bullion and "hard money" cotton fabrics from New England and light wares produced by the steel mills of Pittsburgh. Annual caravans were made up from the trains of individual owners who usually went with their goods down the Trail. Upon arrival at Santa Fe they sold their draft animals and, after spending the winter in New Mexico, purchased a new string for the return trip in the spring.

Santa Fe Trail

On the eve of hostilities with Mexico, a total of 414 wagons bearing 2,000 tons of goods and valued at $1,750,000 figured in the exchange. This carrying capacity, however, fell far short of the estimated transportation requirements of Kerney's Army of the West which, numbering some 4,000 effectives, took the Mountain Route in 1846 to Santa Fe. Although supported by a train of 900 wagons and 10,000 oxen, Kerney's column marched on half rations from Fort Wise to the Rio Grande. Lieutenant J. W. Abert, a quartermaster officer, reported that the road from Leavenworth to Santa Fe was strewn with 5 million dollars worth of government property. "The bones of cattle," he relates, "and in many places the drivers lie side by side—a melancholy result brought on alone by inexperience."

The wartime debacle in overland transportation led to radical reforms. Briefly, the long haul to military posts established in the vast domain taken from Mexico was turned over to civilian contractors. Attracted by large subsidies, many veteran prairie traders specialized as carriers on the Santa Fe Trail. Making two round trips a year and thus handling over twice the tonnage with the same number of wheels, the prairie freight train replaced the old Santa Fe caravan. By 1860, professional freighters were carrying 8,000 tons of commercial goods in 2,170 wagons to the Rio Grande. Loaded to capacity the mammoth prairie wagon bore a burden of 5 tons. On the eve of conflict between the States, the firm of Russell, Majors, and Waddell was the principal government carrier between Fort Leavenworth and Fort Union. A large part of the critical supplies delivered at Canby's base in December 1861 were transported in their wagons.

A National Highway

The importance of the Santa Fe traffic, however, cannot be measured by the number of vehicles on the trail. During the period of American occupation, New Mexico acquired economic capabilities that transformed the old international trade route into a national highway. Improved sheep breeding in the Rio Grande Valley afforded a surplus of raw wool for export. In 1860, a single Missouri firm contracted for 150,000 fleeces. One train returned that year with 50,000 pounds of raw wool. An outbound train carried machinery for the mines of Arizona.

With wool and mine machinery going in opposite directions, the Santa Fe Trail became an artery in the flow of commerce from cotton and steel manufacturing centers of the East into the Mississippi basin and out across the southwestern prairie to New Mexico and the mining camps of Arizona. Canby saw the significance of these developments when he advised Army headquarters that the people of New Mexico "are more intimately connected [with Missouri] in their commercial relations and associations than with Texas and the neighboring states of Mexico." Firmly in-

tegrated in the national economy, both Missouri and New Mexico stood firm in their allegiance to the Federal Union.

Big Wagon Trains

Early in February 1862, Sibley assembled his Texas Mounted Rifles at Mesilla, in southern New Mexico, and moved up the Rio Grande Valley. Canby transferred his headquarters to Fort Craig. He estimated the enemy force at "about 2,600 when it reached this point." Sibley gives his strength as 1,700 "present on the field." Opposed were 1,100 United States regulars and 2,700 New Mexican Volunteers of varying quality.

On the 20th, Canby sallied from his works and fell on the Confederate rear. Attacking in force, he pressed his advantage until a misunderstanding of orders exposed McRae's Battery. The Texans turned and, dashing through a storm of grape and double canister, took the guns and broke the Federal line.

Canby crawled back into Fort Craig to lick his wounds and bide his time. Sibley, missing the supreme opportunity of destroying his adversary in the field, pushed northward, taking Albuquerque on 2 March and Santa Fe 2 days later.

Canby's Policy

With ample supplies in hand, Canby adopted a 3-fold plan of action:

1. To hold Fort Craig and exploit the advantage of intercepting Sibley's communications while awaiting reinforcements from Colorado and California.

2. To send out militia units with instructions to obstruct the enemy's advance and remove cattle, grain, and other means of subsistence from his route.

3. To organize a partisan force from picked men of the volunteers for purposes of operating on the enemy's flanks.

Thanks to these measures, only a small proportion of supplies in the upper valley fell to Sibley's troopers. Major J. L. Donaldson, Canby's chief quartermaster, supervised the evacuation of Santa Fe. Loading stores valued at $250,000 into 120 wagons and using the garrisons withdrawn from Albuquerque and Santa Fe as his train guard, he delivered the supplies safely at Fort Union.

Sibley reacted with a policy of ruthless exactions. A flood of refugees followed Donaldson's train through Apache Canyon. Governor Henry Connelly, whose house "was despoiled of its contents," joined the fugitives. "Anarchy reigned in the valley," according to Colonel G. R. Paul, commanding officer of Fort Union. The militia and a large number of New Mexican Volunteers deserted to the enemy, while "a general system of robbery and plunder seems to be the order of the day."

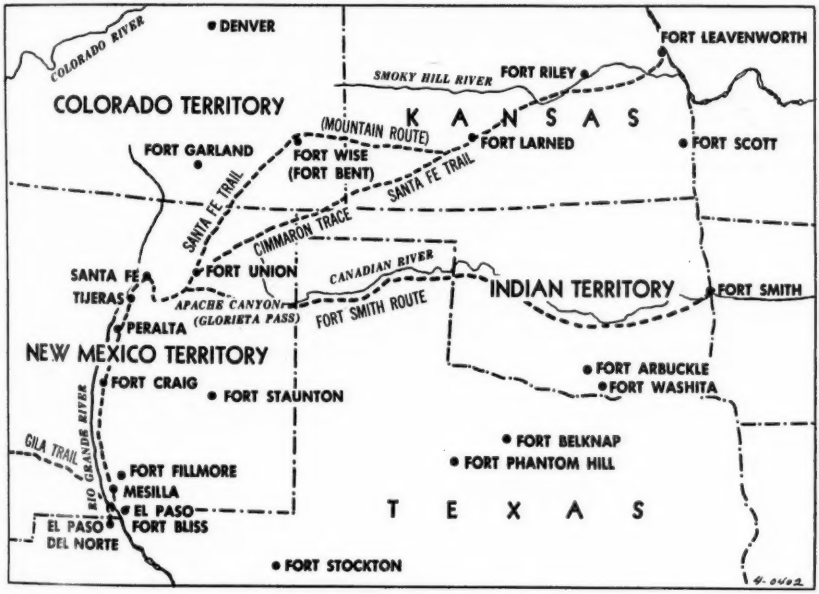
A meticulous regular, Colonel Paul may have been deceived by surface appearances. At any rate, Canby's astute policy of permitting the enemy to outrun his services of supply was steadily diminishing the strategic value of the victories he had won. Fort Craig, in the valley, and Fort Union, commanding the eastern gateway, were securely held. The garrisons in both positions awaited reinforcements—one column hastening southward from Colorado, another marching eastward from California across Arizona. Sibley's narrow margin of time diminished as superior forces gathered in his front and closed on his rear.

The Colorado Volunteers

During the night of 10 March, the silent watch of Paul's outposts at Fort Union was disturbed by a boisterous commotion. Colonel John P. Slough led his First Regiment of Colorado Volunteers into the Fort, completing a march of 400 miles down from Denver through the deep snows of the eastern Rockies. This accession swelled the garrison force, regulars and volunteers, to 2,000 men.

Unhappily, the Colorado colonel brought something besides an increase of numeri-

cal strength; his arrival precipitated a bitter dispute. Slough was a soldier of 6-months' experience, with only an astonishing march to his credit. Paul was a major of the Regular Army, serving now with the volunteer rank of colonel. But Slough's commission antedated Paul's. Hence the command devolved upon Slough, the senior colonel of volunteers. After pouring our his bitterness to The Adjutant General, Paul did his best to act as technical advisor to the impetuous amateur from Colorado.



An operational plan, prepared by Colonel Canby and delivered by courier on 18 March at Fort Union, specified a converging movement against Sibley's force. A junction of the two Federal columns would be effected, the time and route of march to be determined later by the commander.

Slough was instructed that he would march light, carrying only the camp equipage essential to comfort and efficiency. Rations would consist of bread, meat, coffee, and sugar. Ammunition was to be limited to 100 rounds per man and gun. Forgetting the tactical lesson of McRae's Battery, he urged Slough to impress on his men that "their muskets, principally their bayonets, rather than their battery, were their principal reliance." Then, in the matter of strategy, it was suggested that should the northern force become sufficiently strong for independent action against the enemy, the southern force would, upon being properly advised, cooperate with a movement from Fort Union. But Canby was explicit in cautioning Slough against premature action. Supplies at Fort Craig, he stated, were ample for 3 months.

> Fort Union must be held and our communications with the East kept open. If you move, a reliable garrison must be kept in it . . . While waiting for reinforcements, harass the enemy by partisan operations. Obstruct his movements and cut off his supplies. Use the mounted volunteers for these purposes and keep the regular cavalry in reserve. Feed their horses well.

Slough put a loose interpretation on these instructions. Upon advice, 4 days after receipt of the directive that a strong Confederate column was moving eastward from Santa Fe, he took the field with a force of picked units totaling 1,432 troops and including the Colorado Regiment, a battalion of the 5th United States Infantry, a company of regular cavalry, a field and a howitzer battery, and three companies of New Mexican Volunteers.

On 26 March, his advance under Major John Chivington, a warlike clergyman who quit his pulpit to serve the Lord of Hosts on the battlefield, entered Apache Canyon and encountered the enemy near Johnson's Ranch. Although claiming victory, Chivington fell back on Slough's main body which was concentrating at Kozlowski's Ranch.

Acting, apparently, on information obtained by the embattled preacher, Slough determined to force the Pass. He moved in two columns, Chivington going along the heights, while the main body took the winding road through the gorge.

As the rumble of artillery and crash of musketry echoed against the cliffs overhanging Glorieta Pass, Chivington scrambled along the heights toward Johnson's Ranch, the scene of his first encounter. A reconnaissance party discovered the Confederate train corralled in a hollow. The mass of 80 wagons was protected by 200 infantrymen and a single field piece. In the next few minutes the militant divine struck a mighty blow, deciding the issue for cautious regulars and reckless volunteers alike. He tells his own story:

> The command was given to charge, and the troops started upon the double-quick. Captain Wynkoop, with 30 of his men were deployed to the mountain side to silence their gun by picking off their gunners, which they did effectively, Captain Lewis capturing and spiking the gun after having five shots discharged at him. The remainder of the command surrounded the wagons and buildings, killing three and wounding several of the enemy. The wagons were all heavily loaded with ammunition, clothing, subsistence, and forage, all of which was burned on the spot or rendered useless.

While remains of the wagon train smouldered, the battle spent its fury in the narrow canyon. At nightfall, Slough, finding "the numbers and position of the enemy . . . too strong to make a battle," withdrew from the Pass and, after briefly occupying a position to await developments, fell back into Fort Union.

The Texans had won their last and most costly victory. Sibley sent the tidings to Richmond, with an urgent plea for reinforcements.

> I have the honor and pleasure to report another victory . . . The Battle of Glorieta was fought March 28 by detached troops . . . Glorieta is a canyon 23 miles east of Santa Fe.
>
> Pending the battle the enemy detached a portion of his forces to attack and destroy our supply train . . . In consequence of the loss of his train, Colonel Scurry has fallen back to Santa Fe. I must have reinforcements.

Canby Takes the Initiative

Whatever Canby's opinion of the premature move from Fort Union, he was undoubtedly persuaded by the Confederate withdrawal to Santa Fe that his time had come to seize the initiative. On 1 April, he set out from Fort Craig with a column of 1,200 picked troops—850 regulars and 350 New Mexicans—and, hastening by forced marches up the Rio Grande, arrived on the fifth day within striking distance of Albuquerque. On the same day, Colonel Paul sallied from Fort Union and took the road to Apache Canyon. Slough remained in command at the Post.

Confronted by the central mass of the enemy, Canby moved by his right and joined forces with Paul at Tijeras. Sibley, yielding, without a fight, the advantage of interior lines, quit the Albuquerque-Santa Fe area and began his retreat down the Rio Grande. He could not afford another Pyrrhic victory.

Canby went in pursuit. At Peralta, 36 miles below Albuquerque, he came up with

the Confederates. Expecting that they would take advantage of a strong defensive position, he made dispositions to attack on the morrow. During the night, however, Sibley crossed to the right bank of the river, "leaving his sick and wounded, without attendance, without medicine, and almost without food."

The pursuit continued down river, Confederates on the right bank, Federals on the left. Throughout the day of 16 April, the columns marched almost abreast of one another and during the night their camp fires were directly opposite. Before dawn, Sibley abandoned 36 wagons—the remnant of his train—and, seeking to avoid the Federal garrison at Fort Craig, took a circuitous route through the mountains toward Mesilla. Giving over the pursuit, Canby entered Fort Craig and established an advanced base. Back at Mesilla in May, General Sibley expressed his views to Adjutant General Cooper concerning reports that the Confederate Government had no intention of abandoning New Mexico and that reinforcements were hastening to his relief.

> In this vicinity I find myself but little better off . . . The order has consequently been given for the movement down the country by the mass of the forces . . . Our sick are suffering for the want of articles which can only be procured with specie. Of sugar and coffee we have scarcely a pound; all other small rations are alike deficient; whilst of salt meat, we have not an ounce.
>
> Our ammunition may be said to be exhausted . . . Clothing is completely exhausted, with no means of renewing the supply . . . My volunteer aide will hand you this communication. I bespeak for him your kind attention and courtesy.

Rumor of a second invasion from the south received little credence from Canby, now a brigadier general of the Federal forces. He nevertheless appreciated the danger of a hostile force striking westward along the Canadian River corridor. Nor did he ignore the possibility of sporadic raids elsewhere on the Santa Fe communications "in the event of any serious reverses to our troops in the Southwest." He therefore recommended dispositions to meet both contingencies. But the need never arose.

On 26 May 1865, General Kirby Smith, commanding the Confederate Department of the Trans-Mississippi, surrendered all forces within his jurisdiction to Major General Edward R. S. Canby, commanding the Federal Department of the West. By this act the War of Secession, which had already been terminated in the East by the successive capitulations of Generals Robert E. Lee, Joseph E. Johnston, and Richard Taylor, came to an end.

Eight years later, in California, the "victor of the Rio Grande" was murdered while discussing peace with a council of Modoc Indians. General Sibley sank into obscurity after gambling disastrously on the narrow margin of chance contrived by his superiors. Gallantry in battle and fortitude in adversity forgotten, his fame is only vaguely associated with a military tent, the quartermaster specifications of which occupy more space than the chronicles of his campaign on the Rio Grande.

Like the two stout soldiers who fought so tenaciously to control its traffic, the Santa Fe Trail passed into oblivion when the roaring piston replaced the creaking oxen yoke. In 1882, the granite walls of Apache Canyon echoed the shriek of a locomotive whistle. The overland freighters, nevertheless, served conspicuously in a historic crisis. Although frequently menaced by Confederate raiders and Indian marauders, the Santa Fe traffic rolled on through the War of Secession to the Rio Grande.

Hitler's Economic Mobilization

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The views expressed in this article are the author's and are not necessarily those of the Department of the Army or the Command and General Staff College.—The Editor.

WORLD War II has been termed a war of matériel. Although military forces, courage, determination, and brilliant leadership all played essential parts, victory came to those nations which were able to muster overwhelming superiority in matériel. Although England, France, Belgium, and the Netherlands had armed forces on the European Continent in May 1940, which combined were numerically larger than those of the Germans, they were all defeated in the face of Germany's matériel superiority which was made effective by imaginative and determined leadership. Italy made little progress in her attack upon Greece principally because she lacked matériel. It was Soviet manpower, supplemented by the quality and quantity of Soviet and American matériel, which did much finally to stop the Germans.

Germany wanted matériel superiority; however, she did not begin to mobilize industry for a sustained war effort until 1942. Had she started sooner, it is possible that neither the allied powers of the West, nor the Soviet Union might have had time to outdistance German war production.

The *economic potential for war* is not the same as the *economic basis for war.* A nation's economic potential may be great, but unless some part of those resources are devoted to the actual production of military equipment, a nation is not preparing for war. It is only when potential economic resources are mobilized for war—and are producing for war—that the economic basis for modern war is actually provided. Of necessity, war strategy and tactics must depend in large part upon the actual existing production of military equipment.

From the time when Hitler became Chancellor of Germany in January 1933, he was determined to prepare for aggressive military action. This intention was summarized by the judgment of the International Military Tribunal at Nürnberg in October 1946, when it declared, in effect, that the aggressive designs of the Nazi Government were not accidents arising out of the immediate political situation in Europe and the world; but that they were a deliberate and essential part of Nazi foreign policy. At another point, the tribunal asserted that during the years immediately following Hitler's appointment as Chancellor, the Nazi Government set about reorganizing the economic life of Germany, particularly the armament industry, on a vast scale and with extreme thoroughness.

German Mobilization

The mobilization of Germany's economic resources for war can be divided into two phases. One phase was carried out by the armed forces themselves, while the second was undertaken by governmental agencies other than the armed forces. Within the German Army there was some appreciation of the importance of economic resources in the conduct of any future war. One of the principal lessons learned in World War I was the inadequacy of Germany's own economic preparations, and

the difficulties arising out of a prolonged war requiring continued economic support from the homeland. Certain officers in authority were determined to avoid a repetition of the 1914-18 experience. From 1920 to 1933, interest in the economic basis of war potential centered in the Army Weapons (procurement) Office, one of the five offices of the Army Directorate. The planning studies of the Army Weapons Office were pursued in great secrecy. In 1924, a conference was sponsored by that office which included all the military personnel interested in supply matters.

This group demanded an immediate survey of the industrial capabilities of Germany for producing military equipment. In 1925, the Army Weapons Office submitted a recommendation to the Chief of the Army Directorate urging the creation of a war economic general staff, and the establishment of a war economic mobilization program. Although the head of the Army Directorate apparently favored the proposal, he felt that such action should not be taken at that time. Instead, in January 1926, the Army sponsored the creation of a statistical society, which, from all indications, was a convenient subterfuge of bringing together certain Army officers and prominent industrialists. Actually, the real purpose of the society was to obtain data for the Army Weapons Office concerning existing plant facilities which might be used for the production of military equipment, and in turn to provide information concerning future mobilization plans.

The society set up regional commissioners in each Army district of Germany to sponsor the work on an area basis, and the Army in turn appointed "economic officers" in each district. These officers were not officers of the Regular Army but were former officers of World War I who were, at the time, active in German industry. The Army Weapons Office set up a system of files which contained data concerning all German industries which were potential contractors or subcontractors for armament orders. The data showed the industries by location, and reflected the important machine-tool resources of the country which were vital in armament production. The Army Weapons Office went so far in its planning as to prepare two 5-year programs for equipping 16 active German divisions by 1933, and 21 divisions by 1938. These plans were intended to predict the demands which would be placed upon German industry in the event of a mobilization program. In March 1929, the Minister of Defense declared that what industry could produce in a short time was more important to Germany than what it could deliver after a long period of industrial conversion. This statement finally became the keynote of German economic preparation for war during the 1930s.

Apart from this planning activity between 1920 and 1933, there was very little actual war production which could be undertaken. German industry, considerably modernized with the help of foreign loans, was busy producing various peacetime commodities. The entire German economy steadily increased its output from 1923 to 1929 but experienced a severe curtailment of production and widespread unemployment from 1929 to 1933. During this period they were able to erect only a small number of secret facilities which included a few explosives plants and a proving ground for airplanes. There was little

Hitler's war economy was geared to a strategic concept—the concept of short, decisive conflicts on a single front. He considered as essential only that quantity of matériel needed to wage such military operations

other direct economic preparation made for war.

With Hitler's ascent to power, however, economic mobilization planning gave way to actual preparation for conflict. At first the armament of Germany's forces was kept a secret, and not until 1935, when Hitler officially denounced the military clauses of the Versailles Treaty, did the actual production effort become known. As the Army, Navy, and the newly created Air Force began to place orders for military equipment, some controversy arose concerning the organization necessary for directing this armament program. It was proposed that a central armament office be created to serve all the armed forces in time of war, and that the Army Weapons Office be expanded to include this proposed agency during peacetime.

The armed services did not agree to such proposals, and in the end the then Minister of Defense—General von Blomberg—created a Defense Economic and Armament Office in November 1934. This new office was expected to plan for utilization of the nation's economic resources for war purposes, but it had no real co-ordinating authority over the procurement operations of the three armed services. In actual practice the office was consulted only when some difficulties arose in the procurement program of one of the services. In October 1935, the Defense Economic and Armament Office was redesignated the Defense Economic Staff, which new title was more descriptive of the actual planning nature of the office and indicated that it would exercise no real supervision over the current procurement programs. During this period, the Defense Economic Staff was primarily concerned with the economic resources of Germany; that is, its facilities, its raw materials, and its labor supply. The questions of concern to the Defense Economic Staff were the basic ones of Germany's economic war potential; such as how Germany's industrial resources could be expanded to the point where they could support a large and even prolonged military operation, and what proportion of the resources could be allotted to direct military production. These were the problems that became of major concern to the staff. They later became problems of nation-wide concern as the expansion of the armed forces progressed under the Hitler regime.

In 1936, there was a vital change in the organization for economic mobilization. Such general economic planning as the Defense Economic Staff had undertaken was then transferred to a new agency outside the jurisdiction of the armed forces themselves—the Office of the Four Year Plan. This action materially restricted the scope of the Defense Economic Staff under the Minister of War, and henceforth it was to be concerned primarily with the resources which were needed for military equipment. In addition, the Defense Economic Staff became somewhat of a propagandizing agency attempting to enlighten the Minister of War and the high commands of the armed forces about the importance of economic preparations for war. It continued to investigate manufacturing capacity, to study raw material requirements, and to collaborate with the procurement agencies of the armed forces and the Office of the Four Year Plan in achieving plant expansion, both in munitions and in basic industry.

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Each of the armed forces had its own procurement office which purchased the military equipment it needed. In the Army, this procurement agency was the Army Weapons Office, and in the growing Air Force there was a central supply office until 1938, when the Air Ministry united under a single command—*Generalluftzeugmeister*—which included research and development, technical design, procurement, storage, and distribution of all aircraft and aviation supplies. The Navy, likewise, had a single office for naval construction and armament—Chief of Naval Armament. The actual procurement programs of the armed forces in the prewar period were not too carefully worked out, and it was not until the eve of the attack on Poland that there was a procurement program laid out for years in advance. The forces had previously objected that a detailed calculation of requirements involved too much work. The result was that each force attempted to obtain all of the supplies it thought necessary within those general limits fixed by the defense budgets.

Organization

The extent of German military armament by 1939 has been exaggerated. By September 1939, Germany was able to put more than 100 divisions into the field in the Polish campaign, however, only three of these units were armored and none were completely motorized. Germany had almost no reserve stocks of ammunition and equipment, but reserve stocks were not needed for a military operation which would last only about three weeks.

The importance of economic preparation for war was clearly understood by a certain representative group of officers, and they succeeded in impressing their point of view upon those in authority in the German High Command. While the actual achievements up to 1939 were not great, the equipment which was available was utilized to the maximum in a short, decisive action against one military opponent at a time—the kind of campaign which Hitler had previously conceived as the only type of campaign which the German Army would have to wage and in Hitler's opinion, economic mobilization had been adequate for this purpose.

The unanswered organizational question which plagued the German armament program of 1933-39 was, to what extent was the Ministry of War or the Armed Forces High Command to control and direct the mobilization of the nation's economic resources for war? On this point many persons in authority had no doubt; they saw the armed forces as the agency primarily interested in the utilization of economic resources, and hence the appropriate agency for taking a major part in the control of all German resources. Moreover, it had been the armed forces which had been studying the nation's economic resources and their possible utilization for war production since World War I. These same people did not fully appreciate that the control and direction of Germany's resources was a problem for the Government.

The basic policy question concerning what proportion of the nation's resources was to be devoted to the production of military equipment was equally important. This issue could not be settled arbitrarily. If Germany was determined to make the best possible utilization of all her resources for military purposes, then a careful analysis would have been required to determine the proportion of resources which could be used for direct production of war matériel while, at the same time, continuing to provide the supplies essential to the maintenance of the nation's economy as a whole.

There was, in addition, a question as to whether Germany should center her efforts upon the greatest possible production from existing capital resources, or whether a part of current production should be used to expand the future economic potential

for war. Finally, there was a political question as to how far armament production was to be pushed at the expense of an increase in levels of consumption for the civilian population.

Neither the organizational nor the policy questions were ever answered in a carefully planned way during the prewar years. The organizational machinery was improvised from time to time, while the extent of direct war production was determined by periodic political decisions concerning economic production.

At no time after 1920 was the Ministry of Defense the only government agency interested in the functioning of the German economy. As early as 1919, the Government created a Ministry of Economics, a Ministry of Labor, and a Ministry of Agriculture whose activities also affected certain segments of the German economy. Few laws were passed concerning either the organization or the functioning of the German economy, and only after 1931 was any positive control exercised over German industry—in co-operation with the Finance Ministry—in an attempt to equalize German imports and exports. From 1920 to 1933, the German Government followed a general economic policy of refraining from any interference with business activity in so far as possible.

Under the Nazi regime, a major effort was made to relieve the existing widespread unemployment. A large-scale public works program involving construction of new roads, recreational facilities, and new public buildings was directed toward that end. The beginning of military armament at the same time played its part in increasing industrial production and thus put more men to work. However, this economic program was never carefully planned nor separately identified with any particular administrative machinery.

Government organization in the economic field was vitally changed during this early period. In February 1934, a basic law was promulgated which affected the structure of German business. Its purpose was to introduce the leadership principle into the German economy. The Minister of Economics was declared to be the top leader and under his leadership German business was expected to be organized into a hierarchy which would facilitate top control. The law provided that the Ministry of Economics might recognize economic associations as the sole representative of an industry; that he might establish, dissolve, or merge these associations; and that he should control their bylaws and their operations. Under the provisions of this law, the Ministry of Economics then recognized seven national groups, one each for industry, commerce, banking, insurance, power, handicraft, and tourist traffic.

The assembly of German industry, which was, in effect, a national association of manufacturers and a national chamber of commerce combined, became the new national industry group. This group consisted of about thirty subordinate economic groups, each representing a basic division of German industry. The economic groups in turn were subdivided into trade groups, In addition to this industrial hierarchy, there was also a geographic organization for industry within the Ministry of Economics. This began with a national economic chamber which in turn was divided into regional economic chambers and local chambers of industry and commerce. In practice, the national industry group had little importance. The economic groups, and the trade groups under them, were formed mainly from trade associations which were then in existence in Germany.

Thus, the former association of German iron and steel manufacturers became the economic group producing iron for industry. The formerly elected president of the old association became the leader of the new economic group, and the general manager of the association was continued in office. The purpose of this elaborate eco-

nomic organization was not clearly formulated at the time of its creation, or in subsequent years. The Nazi Government simply provided itself with the machinery whereby it might carry out such economic policies as it deemed desirable from time to time. Actually, the economic groups and the trade groups had very little authority. They had no power to issue decrees on their own initiative, and they could not exercise any direct disciplinary control over their members. The groups served as a means of conveying industrial sentiment concerning desirable co-operative action to the Minister of Economics, and, in turn, served as a means for informing industry concerning developing governmental policies.

In May 1935, the Hitler government promulgated a secret *Reich* defense law which set forth the general governmental machinery for directing war preparations. This law established a *Reich* Defense Council of which Hitler himself was chairman, with Hermann Göring as his deputy. This council consisted of the Minister of War, the Foreign Minister, the Minister of Economics, and certain other cabinet officials. Actually, the council met infrequently during the years between 1935 and 1939.

At the Nürnberg Party Congress in September 1936, Hitler announced the adoption of a 4-year plan which was intended to make Germany self-sufficient in the supply of many basic materials. At the same time, he appointed Göring to be plenipotentiary general of the plan. The actual origin of this 4-year plan is somewhat uncertain and the name itself was misleading, for no plan, as such, had been drawn up. In any event, the machinery of the Office of the Four Year Plan came into existence in addition to that of the Ministry of Economics. When Hitler announced the 4-year plan, he had insisted that the German Army must be ready for combat within 4 years, and that the German economy must be fully mobilized for war within the same period. At the then existing rate of expansion, there seemed little hope of realizing these objectives. Göring accordingly created an office for controlling the distribution of raw materials within the 4-year plan. A newly created office for foreign exchange affairs also tended to overlap the work of the Ministry of Economics. The continued insistence of Göring upon interfering with the work of the Ministry of Economics brought about a direct clash between him and the Minister of Economics, Hjalmar Schacht. Schacht was compelled to resign in November 1937. For about two months Göring himself took over the Ministry of Economics. Much of the work which had accumulated within the Office of the Four Year Plan was then transferred to the Ministry of Economics. In February 1938, Dr. Walther I. Funk replaced Göring as Minister of Economics. At that time Göring made it clear that the Ministry would thereafter function under the general direction of the Office of the Four Year Plan, and Funk became a willing tool for the discharge of tasks allotted him by Göring's office.

A new secret defense law was decreed in December 1938, which made the *Reich* Defense Council the top legislative and administrative agency of the state in case of war. It continued the provisions for a plenipotentiary of the economy, who was to place all the economic resources of the nation into the service of *Reich* defense, and to safeguard, economically, the life of the nation. It added a plenipotentiary for administration to have direction of all the non-military administration of the Government except economic administration. Hitler thus provided himself with three major subordinates—Wilhelm Keitel (of the Armed Forces High Command), Funk (actually under Göring) as plenipotentiary of the economy, and Heinrich Himmler as plenipotentiary for administration. This arrangement was not officially announced until the outbreak of war.

Until September 1939, the existing machinery in the field of economic mobilization consisted of a top planning agency —the Office of the Four Year Plan—and various ministries of the Government of which the Ministry of Economics was the most important. The other agencies included the Ministry of Labor, the Ministry of Agriculture, the Ministry of Transport, and the Ministry of Finance. Despite this machinery, there was never, at any time up to September 1939, a real economic mobilization plan, either for war preparation or for war prosecution. The economy as a whole was expanding, and from 1932 to 1939, the German national income almost doubled. Consumer consumption was also increasing, although per capita consumer expenditures in 1939 were really no greater than they were in 1929. These were indications of an expanding economy, induced in considerable measure by government expenditures for armaments and public works, however, they did not indicate an economy mobilized for war.

Thus Germany had elaborate machinery, but no plan. Hitler was not worried for he foresaw no long war, and he proposed to make maximum use of all his existing military equipment in short operations. He was not concerned by his program of "armament in width" instead of "armament in depth" in spite of constant warnings from some of his high officials. Actually, Hitler went to war in 1939 in spite of, not because of, the state of his economic preparedness for war.

The War Years

On the day when the German forces invaded Poland, Hitler established a ministerial council for the defense of the *Reich*. Göring was designated chairman of this council, and its members included Rudolf Hess the deputy leader of the Nazi Party, the secretary of the *Reich* Chancellery, two officials of the 4-year plan, and the chief of the Armed Forces High Command. Two days later, Hitler ordered the complete war mobilization of the German economy. Actually, both actions had little meaning. The ministerial council had no real importance and met only infrequently. War production increased somewhat, but not on a sizable scale.

The war years from 1939 to 1945 should be divided into two parts. The most convenient dividing line is the beginning of 1942. The early campaigns in Poland, Norway, the Lowlands and France, and the Balkans followed Hitler's original strategic concept. Each was of short duration, and each involved the complete utilization of Germany's land and air might in a blitz attack upon a single opponent. In the interval, between each new attack, troop units were reorganized and re-equipped, and the necessary supplies for a short campaign were accumulated, but no large reserves of military stocks were produced or set aside. At first, the Soviet campaign seemed to follow these same lines as military objectives were seized almost on schedule. Hitler was so confident of success that in November 1941, he directed Keitel to reduce manpower drafts and to curtail military procurement. Fortunately from the German viewpoint, the order was never carried out.

By December 1941, it became evident that the Soviet Army had not been defeated, that the Soviet industrial capacity to wage war had not been eliminated, and that the strategic objectives of Leningrad and Moscow would not fall easily into German hands. When the Soviet winter offensive began, the Hitler strategy of short, decisive campaigns had come to an end. Germany faced a long, sustained war effort, and then, when in the same month Hitler declared war upon the United States, the dreaded specter of a two-front war became a reality.

Then, and only then, was a real attempt made to mobilize the German economy for war. The machinery for this mobilization,

despite all the earlier planning, was almost untried. The key figure was not Göring, and the Office of the Four Year Plan provided no more than a convenient administrative framework for the new effort. Early in 1942, then, was the dividing line. The character of Germany's war changed, and so did her economy.

In March 1940, Hitler had added a new civilian ministry to the war government—the Ministry of Weapons and Ammunition under Fritz Todt. Todt already held the title of inspector general for highways, plenipotentiary general for building construction under the 4-year plan, and head of the Organization Todt. He was well known throughout Germany, first as the builder of *Autobahnen*, and later of the *Westwall*. In his role as chief of construction, Todt had taken over the building of certain armament plants for the Army and the Navy. These various activities of Todt in the field of war production suggested to Hitler the desirability of creating a new ministry. The most immediate cause was a lag in Army production, which was failing to realize originally estimated production. The new Ministry for Weapons and Ammunition was intended, primarily, to assist the Army in increasing munitions production and in improving its utilization of raw materials. In part, the Ministry was another expression of Hitler's distrust of the Army's technical capacity.

With the surrender of France in June 1940, the immediate demand for war production lessened. This was one reason why Todt himself became less interested in the whole problem of war production. In the winter of 1940-41, while the Army High Command was planning the invasion of the Soviet Union, the Todt Ministry received a request for increased production of heavier tanks. Larger requirements for all types of weapons began to appear toward the end of 1941. Todt set up three important committees—for military weapons, motor vehicles, and general equipment—bringing industrialists together to assist in increasing war production.

The work of the Todt Ministry was accelerated by a Hitler decree which was issued in December 1941. The failure of the attack on the Soviet Union to realize its original strategic objectives of Leningrad and Moscow was now clear. With greater demands for military equipment than ever before, Hitler directed first, that all weapons and ammunition were to be manufactured by the most modern production techniques known to German industry; second, that the specifications for all weapons and equipment were to be reviewed in order to eliminate unessential use of raw materials and man-hours of labor; and third, that the Army, Navy, and Air Force were to consult manufacturing specialists and production technicians before adopting any new weapons. The enforcement of this decree was entrusted to the Todt Ministry. Thus, the beginning of a rationalization program in the production of weapons meant a greater increase in authority for the Ministry of Weapons and Ammunition.

In February 1942, Todt was killed in an airplane accident. A few days thereafter, Hitler designated Todt's associate and his personal architect, Albert Speer, to succeed Todt in all of his positions. At the same time, Hitler made it clear that war production had to be greatly expanded to meet the changed military situation. Since Speer was an intimate member of the immediate Hitler circle, the *Führer* was willing to entrust the greatest amount of discretion to him in his new positions. In addition to becoming Minister of Weapons and Ammunition, Speer also became head of the Organization Todt, the actual construction agency for military projects outside Germany itself, and plenipotentiary general for construction task under the 4-year plan, as well as inspector general for German roads and inspector general for water and power.

In contrast with Todt, Speer immediately gave his full attention to his duties as Minister for Weapons and Ammunition. He was quick to perceive that a major need in carrying out his responsibilities would be to improve relationships with Göring and the Office of the Four Year Plan. His first step was to persuade Hitler to designate him as plenipotentiary general for armament tasks under the 4-year plan. It is said that Göring never saw this order until after it had been issued.

Whether this be true or not, Speer was quite willing to emphasize the importance of the Office of the Four Year Plan as the central agency controlling the mobilization of all national resources. At the same time, he intended to exercise the authority of that office himself. It was of course impossible to replace Göring. But since Göring himself was not active in the role, it was possible for Speer to take over much of Göring's nominal power. In the long run, the move gratified Göring's ego, and at the same time freed Speer from any supervision by Göring's staff in the 4-year plan.

Little by little, the work of the Speer Ministry grew. In May 1942, Speer arranged to have a large part of the Defense Economic and Armament Office of the *Oberkommando der Wehrmacht* (Armed Forces High Command) transferred to his own ministry. The objective apparently was twofold; Speer wished to supervise directly the production activities of the Army Weapons Office, which was the principal procurement agency of the Army, and he also desired to displace the economic and armaments office as the agency for allotting raw material supplies to the procurement programs of the armed forces.

Central Planning Board

In October 1942, Speer arranged for the creation of a new agency which was nominally within the Office of the Four Year Plan. This was the Central Planning Board, which was to make the top government decisions concerning the allocation of the nation's economic resources. The board usually acted upon the basis of detailed estimates of raw material demands and supply prepared within the Speer Ministry itself. The decisions of the board were usually very broad, indicating the determination to increase certain types of production and curtail others. The intent of these decisions was then carried out by decrees or similar directives of the Speer Ministry. In a short time this Central Planning Board became one of the most important governmental agencies of the Third *Reich*. Ministries, whose ministers were not close confidents of Hitler, came to rely more and more upon Speer's judgment in carrying out their own duties.

Allocation of Labor

The only important segment of the national economy which escaped supervision by the Central Planning Board was labor supply. Shortly after the creation of the Speer Ministry, Hitler also established the position of plenipotentiary general for labor allocation under the Office of the Four Year Plan. This office was headed by Fritz Sauckel—a prominent member of the Nazi Party—who refused to acknowledge that Speer had any supervisory power over his activities. While four different sessions of the Central Planning Board were devoted to discussing labor supply requirements, Sauckel refused to attend the meetings and would not recognize the decisions as anything more than general advice. Thus, Speer was unable to obtain effective supervision of labor supply for German industry even though the Central Planning Board provided him with the means for controlling the use of all German raw material resources. At first, the machinery of control remained in the hands of the Minister of Economics who was not even represented on the Central Planning Board but who was expected to

carry out its decisions through his control offices. As the war procurement program gained momentum, Speer became more and more dissatisfied with this arrangement.

In June 1943, Hitler informed Speer at one of their conferences that he would agree to transfer all raw materials and production authority from the Ministry of Economics to the Ministry of Weapons and Ammunition. The result was the issuance of a decree by Hitler in September 1943, providing for a concentration of the war economy. At the same time, Hitler changed the name of the Ministry from Weapons and Ammunition to the *Reichs* Ministry for Armaments and War Production. Henceforth, Speer was the top boss of the German economy. As the war continued, Speer's authority over the economy became greater and greater.

In the autumn of 1944, Speer was given power to forbid any change in the design of war products which would interfere with mass production. At the same time, he was authorized to limit the time which might be devoted to developmental work by the armed forces, and to eliminate specifications for weapons which were not essential to their combat efficiency. This actually gave Speer greater control than ever before over the research and development activities of the Army, Navy, and Air Force. By a process of steady accretion, Speer became the most important single person directing the utilization of Germany's resources for war purposes. The machinery to direct this utilization was never carefully planned in advance but grew in response to varying conditions. By the end of 1944, the economic controls vested in Speer were almost complete, but he was to have no opportunity to demonstrate beyond his previous achievements what he might accomplish.

Production

In spite of losses on the fighting fronts, the German Army was better equipped with weapons at the beginning of 1944 than it had been at the start of the Soviet campaign in 1941. In 1942, Germany had had to increase her war production with a declining manpower but with fairly stable raw materials and physical plants. The achievements of the Speer Ministry and German industry can be traced to at least three important factors:

1. The curtailment of civilian consumption and improved controls over raw materials.
2. The supply of foreign labor.
3. The rationalization program.

A great deal of credit must be given to the last factor. Much of German industry in 1939 and even 1942 was still in a custom or handicraft stage. Constant emphasis upon the use of the best available production techniques, the elimination of waste in the use of raw materials, and the greatest possible utilization of man-hours—especially of skilled labor—enabled German industry to increase its production of munitions between 1942 and 1944. Speer himself emphasized the importance of his guiding principle—"the self-responsibility of industry." It was this principle which gave free rein to production technicians and enabled him to make the rationalization program effective. The highest production of war matériel in Germany was realized in September 1944. Basic industry was already on the decline, and thereafter production decreased generally. Military defeats on land constricted Germany almost to her prewar boundaries by the end of December 1944. Essential external raw materials and labor were thus removed from the German economy. Continued air attack was taking its toll. The disruption of Germany's transportation system did as much as anything else to hamper economic activity. Whether Germany had achieved the greatest possible production of weapons from her resources in 1944 is not easy to say. The Party leaders were always loathe to see each new

restriction upon civilian production. The exploitation of foreign areas enabled German consumers always to have more than would otherwise have been possible. Certainly the economy as a whole was amply supplied throughout the war. But whether or not Germany was economically as fully mobilized as possible in 1944, the production of weapons was still insufficient for a sustained two-front war. German industrialists knew the war was lost in 1944. Hitler, somehow, expected miracles on the battlefront when he had already lost his economic base for war. This loss resulted in a complete and utter collapse for the entire nation.

Summary

During World War II, there was never a national economic plan in Germany. At no time was a comprehensive analysis of Germany's resources made for comparison with Germany's needs, both in implements of war and in goods required to sustain a war economy. The potentiality of German war production, as a whole, was never calculated, even in general terms. Nor is there any evidence of decisions, periodic or otherwise, on the most desirable division of production to maintain Germany's war effort. Necessarily, under the circumstances, many individual decisions provided partial answers to this basic question—because the question cannot be escaped in a war economy. From the invasion of Poland in September 1939, until the halt before Moscow in December 1941, Hitler did not expect any long, sustained military effort. He was willing to obtain necessary supplies and equipment in large part from unused national resources, especially in plant and labor. True, no single decision to this effect was ever made, but the result of government action was the same as if such a decision had been made. There was a general disposition to encourage consumer production and consumption; the Army and Navy, and the Air Force to a lesser extent, understood that they would have to arm their troops within definite limitations.

When the Speer Ministry began its operations in 1942, the immediate and pressing need was to expand the production of military weapons. Hitler then took a more active interest than ever in the review and approval of requirements programs for the armed forces. The requirements as accepted or modified by Hitler became the production goals for the Speer Ministry.

In practice, most of the actual detailed determination of military requirements remained in the hands of the Army, Navy, and Air Force. Hitler's own review was decidedly personal. He took a special interest in the production of tanks and self-propelled guns, heavy artillery, antiaircraft artillery, aircraft, and U-boats. In many instances, Hitler's modification of military requirements—after 1941 these modifications were almost always upward—was based upon little more than his well-known intuition. Hitler had no personal staff, and therefore had no actual basis for critical analysis of military requirements.

Conclusions

From a strictly materialistic point of view, any economic system must be judged by its performance. To be sure, performance need not be measured solely in terms of physical production. There are other satisfactions of importance besides quantities of worldly goods. However, in a war economy, production is certainly vital and without large-scale productive effort there can be no large-scale military effort.

Hitler's war economy was geared to a strategic concept—the concept of short, decisive conflicts on one front at a time. He considered only the quantity of supplies needed to wage such military operations to be essential. Quality was considered very important and here German

industry did its part with its customary technological and scientific skill. The German Army in 1939 was *well* if not *fully* equipped.

There was an additional element to Hitler's strategic concept of war—that Germany must fight and win land battles on the European Continent. There was only a small and indecisive role for a Navy to play and, therefore, there seemed little point in devoting limited national resources to the construction of a powerful Navy. Air power on the other hand was considered an important part in the plan. In spite of this fact, however, the air weapon was visualized as a force to be used primarily in combination with ground armies. The belief in a separate strategic mission for aircraft seems to have suffered a severe setback after the Battle of Britain in August and September 1940. These strategic concepts determined Germany's economic mobilization for war. National resources were to provide a large Army and Air Force with modern equipment. Replacement supplies were not needed, because each campaign would be short and would be followed by ample time for the existing production schedules to compensate for battle losses.

The Nazi Party came into power in Germany in the aftermath of a devastating economic collapse. Recovery was the first slogan—the economy must provide jobs, and goods to buy. Hitler and the Party wanted to demonstrate that the German worker and the German masses were better off than the English and French under democratic liberalism, or the Russians under Soviet communism. An expanding civilian consumption would afford such a demonstration. Hitler devoted only a part of the nation's essential resources to armament because a larger war effort would have been incompatible with the Party's general economic protestations.

From September 1939 to the end of 1941, Hitler saw his strategic concepts duly and successfully executed. His genius was proved. He then discovered that the Soviet Union was not defeated.

Hitler paid Japan for her entry into the war by involving himself and his Italian partner in war against the United States. Thus the hope of short, blitz campaigns against one enemy at a time was gone. But Hitler was not economically prepared for the new kind of war he then had to fight. Hastily he took steps to enlarge the industrial base of his military might, but it was too late—he lacked the time and the resources for success. His doom was already forged—he simply refused to see it until the bitter end.

The conclusion is inescapable. Germany, economically, was not capable of waging a prolonged war of the type she faced from 1942 until the end in May 1945. Germany did mobilize her economy, but proportionately not as well as her foes. Organizationally, the greatest defect in Germany's economic mobilization was the lack of effective over-all direction. Hitler was never willing to entrust direction of the economy, as a whole, to a single person even though the task of co-ordination was too great for the Chief of State to bear alone. Germany was not prepared, economically, for the kind of war she faced from 1942 to 1945. She still had her generals, her troops, her quality equipment, but under the circumstances these were not enough.

We must continue to survey our resources, our manpower, our products, and our adaptabilities with possible conversion in mind. We must maintain permanent liaison with the appropriate government agencies.

Secretary of Defense Charles E. Wilson

PSYCHOLOGICAL WARFARE

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The views expressed in this article are the author's and are not necessarily those of the Department of the Army or the Command and General Staff College.—The Editor.

"PSYCHOLOGICAL warfare" is the application of the science of psychology in the conduct of warfare which is co-ordinated and integrated with both the strategic and tactical operations and is designed primarily toward victory on the battlefield. It is the use of ideas and attitudes substituted for physical weapons against the enemy, and represents persuasion by non-violent means. It seeks to reduce the will and ability of the enemy to work and fight by creating new attitudes and destroying his morale.

The chief means for implementing psychological warfare is through the use of propaganda—the systematically organized and planned use of any form of communication designed to affect the feelings, thoughts, and actions of a group of individuals in a certain direction for a given purpose. If the propaganda is not planned, it is not within the purview of propaganda.

There are five principal kinds of propaganda, and each is designed to play a specific role in psychological warfare.

1. *Overt propaganda*—issued from an acknowledged source.

2. *Covert propaganda*—issued from an unacknowledged source, and usually disguised to resemble home origin.

3. *Strategic propaganda*—designed for general purposes, for the general population, and usually on the basis of long-range plans.

4. *Tactical propaganda*—designed for a particular group of individuals and for a definite and precise purpose.

5. *Counterpropaganda*—issued to refute or neutralize the effect of enemy or other propaganda.

Propaganda and education are alike in that they both seek to accomplish changes in the individual, however, the means by which they seek to accomplish these changes are direct opposites. In education, we seek to develop the individual through self-directed and self-initiated experiences so that he will be able better to decide on his own values and select the appropriate means for realizing them. In propaganda we seek, through a predominant emotional type of appeal, to indoctrinate the individual, to adopt and accept ideas, attitudes, and values that have been planned and preconceived for him.

The history of psychological warfare is as old as civilization itself, and it has been utilized by both sides in almost every war that has ever been waged. However, like the discipline of psychology, its first systematically organized and co-ordinated use in modern warfare was made by the British and Americans in World War I. Many expert military strategists have claimed it to have been the decisive weapon which resulted in victory for the Allies nearly one year ahead of the expected victory date. Since World War I, most of the dictators have striven to perfect the use of psychology through propaganda dur-

ing war and peace—both against the enemy and their own people—but always to accomplish their own ends.

Principles

Effective psychological warfare must take into account the emotional predisposition of the enemy, and must seek to determine their hopes and fears—the desires they covet and the anxieties they feel. On the basis of such analysis we should organize and plan a program that will make maximum utilization of these findings, rather than direct it at vague, general, and abstract objectives. In the application of such a program, certain principles have emerged during the last two decades from studies of attitudes, propaganda, and prejudices, which are believed to be helpful in facilitating its effectiveness.

Utilize Vantage of Enemy

Psychological warfare must be predicated on the perceptions of the enemy—for a man cannot be expected to want his side to lose if he is a good citizen. Certain vulnerabilities of the ethnological structure of the enemy are determined and programs are planned to capitalize on them. However, this does not preclude the possibility of directing the program at non-vulnerable areas. The continued success of the program is dependent upon continuous pacing, in a dynamic and cybernetic fashion, to the growth and development of the enemy in terms of their acceptance of the propaganda disseminated, and in terms of concrete action on their part.

Effective psychological warfare is a copartner in combat and therefore, it must be continuously co-ordinated and integrated with all aspects of combat. Intelligence reports must be accurate, valid assessments of enemy situations if they are to be used for psychological warfare purposes. Each time these reports are communicated to the enemy in such a fashion that the accuracy of the report can be verified, it tends to facilitate the confidence of the enemy in the program being implemented. Of necessity this program entails some sacrifice of security information, and thus the program must be very carefully weighed and balanced to determine the advantages and disadvantages of its various aspects, both in terms of overall strategy, and the immediate day-to-day tactics of the field commander. Promises that cannot be kept, should certainly never be made; but, the program should definitely have a positive character, and tend to eliminate indecision.

The enemy is presumed to be accepted only as humanity not as a bosom friend. Only the enemy and the wager of the program are presumed to exist for purposes of developing the communications. The real strength and effectiveness of the program is obtained primarily from meaningful comparisons that tend to maximize the enemy's weakness and emphasize our own strength—but in objective terms and a language that they understand. The use of satire, indirection, and name-calling is not effective, and many times tends to destroy the effectiveness of the program.

Psychological warfare is a supplement to the physical weapons used against the enemy. It seeks to reduce the enemy's will and ability to work and to fight by creating new attitudes which destroy his morale

Effective psychological warfare must be conceived in totality, and in conjunction with the field commander's entire plan. It cannot be left for the imagination of the enemy—who are expected to participate in it—to complete. The final structuring of the idea, attitude, or value must be a function for the participating enemy

members, but the complete pattern for that structuring is always present in the plans and presented in the program.

Enemy Incited and Directed

While the planning and organizing of the program is accomplished by the field commander, the ultimate effectiveness of its implementation is dependent upon the participating enemy members themselves. In communicating with the enemy, continuous effort must be directed at indicating the specific role expected of the various members, and the relationship of the various roles to the total plan. Communications of the field commander implementing the program are usually received by a a very limited number of the enemy, but it should be made clear in the communications that each one of them has the responsibility for soliciting help among their intimate acquaintances. Care must be exercised not to make demands involving safety risks beyond that which would be required of our own personnel.

Psychotherapy, as well as psychological warfare, deals with three basic variables: (1) mental health, (2) emotional maturity, and (3) general vulnerability to barriers and limitations imposed in the social climate by the group membership. The comparisons listed in the chart on this page indicate the primary basic objectives of each of them.

Psychotherapy	*Psychological Warfare*
1. Seeks to integrate the feelings and thinking of individuals.	1. Seeks to disintegrate the feelings and thinking of individuals.
2. Seeks to develop a process of self-directed goal-setting and goal-striving, in which there is ego-involvement.	2. Seeks to develop a dependence on preconceived goals and behavior for which there has been demonstrated an indisputable basis for validity.
3. Seeks to develop and increase the individual's vulnerability for barriers and limitations established in the social climate by the group.	3. Seeks to destroy and eliminate the individual's vulnerability for barriers and limitations established by enemy group membership.
4. Seeks to promote emotional maturity, and to eliminate indecision of individuals.	4. Seeks to create panic and anxiety, and to foster and engender chaos and indecision of individual enemy members.

Psychological warfare, as such, consists of persuasion by non-violent means, but its ultimate effectiveness is always measured in terms of actual gains in military strategy. Where the employment of physical weapons begins, psychological warfare ends—in terms of activity associations. The continued effectiveness of the program is predicated on dynamic cybernetic relationships where the progress and pacing of the activity is continuously based upon

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evaluations and assessments of its progress, and considers both the viewpoint of the enemy and the implementing party.

Approaches to Psychological Warfare

The strategic and tactical control of the movement and behavior of large segments of the enemy civilian population is one of the major objectives of psychological warfare. By the use of effective communications techniques, enemy civilian populations—usually in densely populated areas—are instructed that their area of the country is to be bombed for strategic or tactical reasons, and are requested to move from that area into certain other outlying areas having little strategic or tactical importance, by certain deadlines. The follow-up bombing or destruction of those areas should always follow, but the time of bombing should vary from immediately after the deadline until periods of 5 or 6 months later; thus tending to neutralize the value of tactical surprise and compromise of security for enemy defensive purposes. Also, the degree of bombing should vary from harassing to complete destruction depending upon the tactical objective.

Through the use of this technique, and by varying the amount of information given to ensure a minimum compromise of security data for a maximum control of the civilian population, two primary objectives are obtained:

1. The effectiveness of the enemy supporting civilian population is reduced substantially.

2. The confidence of the enemy participating members is established in the communications involved in the program—thus, facilitating the support for it.

Enemy's Ethnological Structure

Prior to the implementation of a psychological program, a study must be made of the enemy's ethnological structure.

The success of recent dictators in organizing civilian populations may be attributed in large part to a rather consistent characteristic pattern of ethnological structure accompanied by force, fear, and surveillance. Political and economic power is retained in the hands of a few, and the direction of communication is chiefly from the ruler to the people. The general pattern for the status of the individual emerges primarily from a social hierarchy in which independently organized castes, beginning with the pre-school group, and including numerous other groups for each of the broad stages of development, such as, childhood, puberty cycle, adolescence, and adult stages. Obligations, responsibilities, and power for the respective groups are in proportion to the stage of development, and in a general downward direction—that is to say, authority is restricted to groups for earlier stages of development. It is the kind of structure that should be a primary target for the psychological warfare program, and which appears to have strategic importance.

Citizenship Structure

Great care should be exercised in discerning between national loyalty and contemporary citizenship of the enemy members participating in the program. They must be made to feel that the great masses of their people are being exploited by a few individuals who are in power—you are many and they are few, the rest of the world desires you to be a free country, and are doing everything in their power to free you from enslavement by this little band of rulers who are exploiting you. You must outwit this group of leaders, and the free world will endeavor to help you accomplish this end.

A continuous instructional program should be conducted for participating enemy members with three separate areas of concern: (1) news and information, (2) ideology and the integrity of man, and (3) evaluation of past activity in the program and future plans. These three aspects of

the program should be about equally divided in terms of emphasis.

The new portion of the program should attempt to give information of all kinds that is related to the present war effort, both within the enemy country and in the implementing country. Great care should be taken to ensure that reliable data is disseminated; so that where the enemy has access to validating criteria, the confidence for the program is facilitated. The most important aspect of this part of the program is the interpretation which is given for the events and information.

The portion of the program that deals with ideology and the integrity of man should seek to exploit those activities and behavior which the enemy has traditionally enjoyed, but which the current rulers prevent them from engaging in. In general, this might include such factors as religion, free elections, free expressions, and some of the other inalienable rights of man.

Periodically, evaluations of the present program should be made and the participating enemy should be informed of the consequences of failing to support the program to themselves and their country. Future plans should be revealed in sufficient detail to provide the necessary information for members to become indoctrinated and plan for their new roles.

Soldiers in the field of battle gamble everyday with the most precious possession they have, human life. In addition, they are continuously being deprived of the social fellowship and homelife of their families and friends, the second most important thing in the world to them. They continue to be vitally concerned about the welfare of their friends and families back home, and the worth whileness of their effort always includes these considerations. The aim of psychological warfare is to demonstrate the worth whileness of their effort through comparative data, and to emphasize the hardship and sacrifice effort. This is designed to create attitudes in the individual soldier that are not sympathetic to the enemy cause, incite indecision and general ineffectiveness of effort, undermine the morale, and finally, to provide a means for surrender whereby the integrity and face of the soldier is spared.

Communication

Effective psychological warfare is totally dependent upon satisfactory communication with the enemy population, both civilian and military. Every means conceivable is utilized to accomplish this end satisfactorily, and usually multiple means are included in the same effort. The use of the distribution of leaflets by airplane over enemy territory, together with shortwave and regular radio communication has been the most effective means. However, the initial penetration of the communication by the field commander is considered as a minor portion of the total communication which is directed and expected by the participating enemy members themselves. Newspapers, moving pictures, posters, magazines and booklets, and the use of returned prisoners of war are other means that are employed in the total program.

For every aspect of the psychological warfare program of the enemy, there must be some countermeasure developed to neutralize the effect of the enemy's plan. Initially, these countermeasures may concern themselves with interfering with the communication, but it cannot be content to stop there. Two major aspects of the countermeasures employed are: (1) propaganda analysis, and (2) propaganda intelligence. The first is concerned with identifying the propaganda and making an analysis of it to determine its source of origin, subject matter content, intended audience, and its intended objective. The second is concerned with making continuous estimates of the enemy situation, and the general effectiveness of our own program; this may include opinion analysis.

MILITARY NOTES AROUND THE WORLD

UNITED STATES

Plane Similarities

The similarities between the Soviet-made *MiG-15* and the latest United States planes could have resulted from independent research according to a spokesman for the National Advisory Committee for Aeronautics (NACA). He said the apparent similarities were the high positioning of the tail with respect to the wings, and the swept-back tail elements.

The spokesman said that the high positioning of the tail was being developed almost simultaneously in Germany and this country during World War II. He said it was an obvious answer to a severe buffeting problem associated with high-speed planes. After the war, teams of United States and Soviet aeronautical experts, working separately, questioned German aircraft designers. It was at this time that the Americans learned of the German *Tanke-138*, somewhat similar to our *F-86 Sabre* jet.

The *Tanke-138*, with a top design speed in excess of 600 miles an hour, took top prize in a design contest in Germany in 1944. It is because of the fact that Soviet and American designers were working with nearly the same background information that they could have produced planes of similar design characteristics.—News release.

Tiny Submarine

The *T-1*, the smallest submarine built by the Navy since 1910, and the first submarine since 1907 with only a single propeller, was launched recently. She has a crew of 2 officers and 12 men and is 113 feet long; so is not truly a "midget" submarine. The regular fleet submarine is, however, 312 feet long and carries a crew of at least 70.

The *T-1* is very maneuverable and will twist and turn, dive and climb deep under the seas to provide a moving target for the practice of American destroyers, submarine chasers, and other pursuit craft. Her short, stubby length makes her an elusive target.—News release.

Latest Sabre Jet

A new version of the famed *MiG*-killing *Sabre* jet, the *F-86H*, designed to carry out dual missions as a fighter-bomber and a day fighter, has made its appearance. It is slightly larger than present *Sabres* and is powered by a new and more powerful engine, the *J-73*. Most improvements remain restricted but the plane has a clamshell type canopy, a sturdier landing gear, and improved suspension and release mechanisms for carrying droppable wing tanks in conjunction with bombs and rockets.—News release.

Rotary Bomb Door

The development of a new pre-loaded bomb bay door, which rotates 180 degrees just prior to bomb release and leaves no opening for buffeting winds, has been announced by the Air Research and Development Command. Bombers flying at speeds of 600 miles an hour have been forced to cut their speed when making

Rotary door adds safety to bomber runs.

their approach to a bombing run because the open bomb bay presents a yawning chasm in which the airstream can play weird tricks. This slow-down leaves the planes more vulnerable to enemy fighters and antiaircraft guns. Not only was the plane subject to buffeting but often the turbulence was so strong that bombs failed to fall, and presented a hazard as they "floated" in the bay cavity. With the new door, the bombs are carried externally just prior to their release and cannot float in the cavity.

The problem of "tumbling," characteristic of bombs dropped from planes flying at high rates of speed, has been overcome by the new door. The door is removable from the plane. When out of the plane, it is mounted on wheels, loaded, checked, and fused. To change doors takes only a short time and presents a considerable saving over present methods.—News release.

Rubber Highways

Two stretches of highway in Colorado are to be paved with a mixture of 3 percent solution of artificial rubber and asphalt.—News release.

Preferred Term

Although both terms are correct, the use of "United States Army" is preferred to "Army of the United States" according to paragraph 6 of Army Regulation 320-5. Both terms mean the Army or armies referred to in the Constitution, less that part established by law as the United States Air Force.

The United States Army includes the Regular Army, the National Guard of the United States, and the Army Reserve; all persons appointed, enlisted, or inducted in those components; all persons appointed, enlisted, or inducted in the Army without specification of component; and all persons serving in the Army under call or conscription under any provision of law, including members of the National Guard of the States, Territories, and the District of Columbia, when in the service of the United States pursuant to call as provided by law.

In some cases, however, "United States Army" has been used in statutes to mean the Regular Army. It will not be so used except with specific reference to such statutes.—News release.

Aerial Camera

The answer to the Army's need for a compact, easily handled camera for front-line aerial reconnaissance has been found according to the Air Research and Development Command of the Air Force. The *K-44*, as it is known, is a hand-held camera designed for use in light, liaison aircraft. It uses 50-foot rolls of 5-inch film. Either a 6- or 12-inch lens can be used with the camera. It has been turned over to the Army for service tests.—News release.

Bulky Transistor

The tiny transistor which has accomplished wonders in the reduction of the size of electronic equipment has been described as too large by a firm engaged in their manufacture. Its officials say that with proper research, its size can be halved. They point out that the case is too large as the "working element" in the transistor is actually a pin point of germanium.—News release.

Manpower Limitation

In the event of full mobilization in the near future, the United States would find that its limiting resource was manpower, according to the National Planning Association. This country is about 40 million short of matching the Soviet Union man for man.

The Association suggests the establishment of a Civilian Reserve as part of a long-range manpower policy. This group would be subject to periodic active service for which men would be released on the same basis as for active military duty. They would serve as a civilian hard core in such fields as transportation, industrial management, and rationing in event of a new war.

The Soviets are placing major emphasis on the training of technological personnel and are presently graduating 30,000 engineers a year from a 5-year course while we are graduating 23,000 yearly from a 4-year course.—News release.

Transfer Center

Since most personnel now being released from active duty have Reserve obligations, the Army is making every effort to ensure that these individuals are fully aware of the concept of continuing service. In keeping with this policy, all activities formerly designated as Separation Centers and Separation Points have been redesignated Transfer Centers and Transfer Points.—News release.

Fury Jet

Greater speed and an increased rate of climb over its predecessors in the *FJ* series are claimed for the prototype, *FJ-3*, Navy *Fury* jet fighter. It has a 35-degree swept-back wing and all-flying tail. This tail gives the pilot better control at high speed. The jet air intake is in the nose of the plane. The airplane has been modified slighly to acommodate the powerful *J-65 Sapphire* engine. It is larger and heavier than previous models and carries a lethal striking punch. The plane, rated in the high subsonic speed class, will carry an improved Navy gunsight and navigation equipment.—News release.

***FJ-3* has greater speed and rate of climb.**

Remote Physical

A "telemetering" device which allows a physician on the ground to conduct physical examinations of pilots flying in an airplane has been developed by the Navy. Tiny silver electrodes taped to various parts of the pilot's body transmit the reaction—via an amplifier and an ultra-high frequency radio—to a bank of instruments on the ground. With the device, it is said that scientists can determine heart performance, respiration, skin and body temperature, pulse rate, and brain wave activity.—News release.

Pain Easer

Advanced research into a method of controlling pain with supersonics is being conducted in the Gibson Laboratory at the University of Pittsburgh and at Aspinwall Veterans Hospital. "Pain pathways" in the brain are destroyed without the necessity of actually cutting the brain by supersonics—ultra-high frequency sound waves. The new technique was first carried out on animals in the Gibson Laboratory and later was extended to include patients at the Veterans Hospital.—News release.

Traffic Control

The development of an electronic system for airport traffic control which greatly increases the landing rate of aircraft under high density traffic or poor visibility conditions has been announced by the Air Research and Development Command. The system utilizes radar to track the aircraft and automatically schedules the landing sequence of aircraft approaching the airport.

The equipment first calculates the time at which a given aircraft would arrive and then determines if another aircraft has been scheduled previously for that time. If the runway is found to be free of other landing planes, then it comes directly in. If, however, a landing has been scheduled, the system then finds the next available open time and computes a detour path that will introduce the proper delay. The computed heading instructions are relayed to the pilot by radio.

The new system permits planes to approach the landing area in an orderly and controlled manner. It eliminates the delays inherent in the present method of "stacking," wherein planes "hold" at assigned altitudes in the general vicinity of the airport until their time for landing comes. It is expected that plane landings can be scheduled at 30-second intervals under the new system.—News release.

Nonprofit Research

During the past fiscal year, of the $2,200,000,000 spent by the Government for research and development, more than 338 million dollars went to nonprofit institutions according to the National Science Foundation.—News release.

Sampling Device

A sampling device for drone airplanes that fly through radioactive clouds after atom bomb explosions, has been invented. The device funnels air through a nozzle and traps a sample of the air and solid particles it contains in an airtight bag inside the plane. A representative sample of the cloud is collected in a suitable form for laboratory analysis.—*Science News Letter.*

Telephone Dialing

The operations of telephone systems and computers can be speeded up a thousand times faster than that of present mechanical switches by the use of a new electronic device about the size of a match head. The device, described as a "silicon alley junction diode," has neither filament nor vacuum as in the ordinary radio tube, is ready to operate instantly because there is no warm-up period, and has a calculated life span said to be almost unlimited. If used in central telephone switching systems or electronic computers, such devices would far outlast the machines themselves.—News release.

Automatic Pilots

The United States Air Force has placed a $16,850,000 order for an advanced electronic automatic pilot for one of the nation's newest jet fighters—the *F-89D Scorpion.* The automatic pilot will guide jet fighters to targets electronically and can be tied in with a radar fire control hookup to direct a plane accurately to its target long before the target is seen by the human pilot.—News release.

Miniature Gyroscope

The world's smallest rate gyroscope, used in guided missiles, fire control systems, aircraft instruments, radar antenna stabilization, and with many other applications, is to be mass produced in the near future. It measures less than 1 inch in diameter, and less than 2 inches in length, and weighs less than 3 ounces. Other types weigh from 1 pound to well over 5 pounds.

The gyro is contained in a metal cylinder, its motor driving the rotor at 24,000 revolutions per minute, a speed which can be attained from a dead start in less than 10 seconds. Neither precision nor reliability are sacrificed in its size.

The subminiature gyroscope, because of its size and light weight, meets specifications that others are unable to attain, according to its production engineers.—News release.

Speedy Computer

Construction of the world's fastest digital computer-type electronic brain has been completed. The *Oracle* (Oak Ridge Automatic Computer, Logical Engine) will be installed at Oak Ridge. The $350,000 computer can multiply 12-digit numbers by 12-digit numbers about 2,000 times a second.—News release.

Heart Disease

In autopsies of 300 battle or accidental deaths of United States soldiers, mostly in their twenties, in Korea, it has been discovered that over three-quarters had gross lesions of their coronary arteries. The report showed that about one-fifth of the men had autopsy evidence of real disease. They showed 40 percent or more narrowing of one of the major vessels of the heart. Three percent had complete closing of one or more branches of the blood vessels. This heart disease, evidently, had gone unnoticed or had caused the men no trouble.—News release.

Progress

In 1942 when the *B-17 Flying Fortress* made its first raid on Germany, it was considered the biggest and best heavy bomber in the business. Today, 11 years later, the *Flying Fortress* is dwarfed by the *B-52 Stratofortress*, the newest, largest, and fastest heavy jet bomber of the Air Force. The new *B-52* weighs more than 300,000 pounds, has the speed of a fighter, and is powered by eight *J-57* engines.

The *B-52* dwarfs its predecessor the *B-17*.

The *B-17* that bombed Germany weighed 40,000 pounds and had four engines of 1,000 horsepower each. The measurements of the *B-52* and *B-17*, respectively, are: wing span, 185 feet and 103 feet, 9 inches; length, 153 feet and 74 feet; and tail height, 48 feet and 19 feet.—News release.

Atom Auto

Atomic-powered automobiles were described as "nonsense" by a leading atomic scientist. He said the cost of installing nuclear reactors—machines which generate atomic power—would be too high.

The scientist declared that even if this were not so, dangerous radiation would require shields and there is no known way of building such shields.—News release.

AFRICA

Aluminum Development

In an effort to increase the production of African bauxite from its present 30,000 tons to 100,000 tons a year, the formation of an institute for research and development is being planned by five Western European countries—France, West Germany, Italy, Belgium, and the Netherlands. The society will produce military and civil aircraft, 250-ton river barges for navigation of Africa's waterways, and aluminum prefabricated houses.

The project, expected to cost more than a billion dollars, is to be financed to one-third its cost by the countries concerned and to two-thirds by banks and private investors. The site selected for the plant is near the Konkoure Waterfall in French West Africa. Hydroelectric energy for the project will be obtained from a new power plant on the Samou River about 60 miles east of Conakry.—*The Christian Science Monitor.*

ARGENTINA

Trade Pact

The Soviet Union and Argentina are expected to exchange 300-million-dollars worth of goods under a mutual trade pact it was announced recently. Under the terms of the pact, Argentina will get 500,000 tons of oil and 300,000 tons of coal in return for 75,000 tons of linseed oil, 20,000 tons of leather, and 20,000 tons of wools.—News release.

Argentine Navy

A Japanese firm has been asked to build a fleet of destroyers, frigates, and submarines by Argentina for her Navy. The ships range in size from 1,000-ton frigates to 3,500-ton destroyers but the exact number of ships in each class was not given. The first ships to be constructed would be submarines. If built, these would be the largest warships constructed in Japan since World War II.—News release.

YUGOSLAVIA

Aid Cut

During the ensuing fiscal year, the United States, Britain, and France will give Yugoslavia 59 million dollars in economic aid. The country received aid worth 145 million dollars from the three Western powers during the fiscal year recently ended. Officials of the three powers said they hoped economic aid to Yugoslavia would end in fiscal year 1954-55. —News release.

Ammunition Production

Yugoslavia will produce for herself ammunition worth $5,390,000 under the first offshore procurement contract between that country and the United States it was recently announced.—News release.

SPAIN

Army Overhaul

Spain is planning to rejuvenate the officer cadres of its Army by facilitating the advancement of younger men with the "voluntary" retirement from active service, at full pay, of officers who have been in the service since before 1 April 1939 it was recently reported. It is felt that the younger men will display greater aptitude for absorbing the technical knowledge which modernization of Spain's Army, by way of American aid, will require.

By allowing officers to state their preference as to where they want to be posted and attempting to comply with these desires, Spain hoped to overcome the problem of the part-time officer, who because of his low pay is forced to seek outside employment to make ends meet. A second lieutenant receives $225 a year and a captain gets $525 in addition to various privileges and living allowances. It is felt most officers would prefer to be stationed near their homes where the economic advantages will help to compensate for the low rate of pay.—*The Christian Science Monitor.*

INDIA

Recruit Gurkhas

The British Army has been given permission to recruit Gurkhas for the next 5 years by Nepal according to a reliable source.—News release.

Modernize Nepal

Urgent projects needed to modernize Nepal will be financed by India according to assurances recently given the prime minister of the mountain country. Previously, India had agreed to give the strategic state about 30 million dollars to build highways in the almost roadless kingdom, hydroelectric facilities, and other projects. This money is to be advanced as needed and as the programs are brought to the working stage.

Nepal is building its first motor road from Katmandu, the capital, to Rauxaul on the Indian border. It is expected to be completed next year as a first-class truck highway giving the country its first transport connection with the outside world except by airline and pony.

Under the Colombo plan of aid to South Asian countries by the British Commonwealth, India has also agreed to sponsor two major hydroelectric projects.—News release.

BOLIVIA

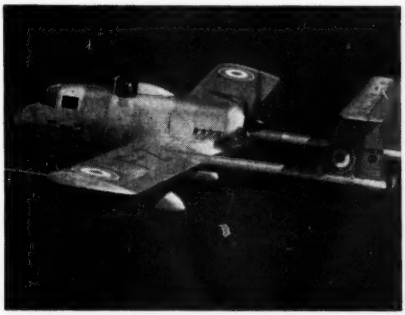
Agrarian Reform

Bolivia recently enacted legislation giving land to 2½ million peasants who formerly had been virtual "serfs." Persons more than 18 years old, regardless of sex, may apply for 123 acres in the eastern part of the country providing that they start working the land within 2 years. Lands belonging to the community prior to January 1900, will revert to the local populations and be subdivided into parcels. All gum and nut trees in eastern Bolivia have been placed in the public domain for the benefit of the workers now cultivating them.—News release.

FRANCE

Potez 75

A new French two-seat, close-support plane, the *Potez 75*, armed with guided missiles and rockets for ground-level attacks and tank-hunting, successfully completed its first flights recently. The plane,



New French close-support plane—*Potez 75*.

built in 5 months, carries a crew of two —the pilot in the open cockpit and a gunner in the forward-placed cabin thus allowing him extensive views of the ground. The undercarriage is armored against attack from the ground. The plane has a cruising speed of 153 miles an hour and a range of 470 miles.—News release.

AUSTRALIA

Engineering Projects

Southeastern Australia's vast combined electric power-irrigation scheme will be further advanced when three contracts totaling more than 100 million dollars are awarded. The contracts involved are for the Eucumbene-Tumut Tunnel, to carry water from a large reservoir on the Eucumbene River on the eastern coastal watershed to Tumut River on the western or inland side of the range; the Tumut Pond Dam, with concrete arch-dam wall; and a large underground power station on the upper Tumut River, with an installed capacity of 320,000 kilowatt hours.—News release.

COMMUNIST CHINA

Five-year Plan

The project of industrializing agricultural China in the same manner that the Communists industrialized the Soviet Union has been launched with the announcement of the first 5-year plan for that country. The plan is regarded as a major reason for the Peking Government's desire to obtain an end to hostilities in Korea. Primary emphasis will be given to the development of a heavy industry which is seen as the key to modernization. The industrialization is apt to be either slower or more violent than in the Soviet Union because of the large Chinese population and an economy producing relatively small capital surpluses.

The Chinese Communists have already launched several basic steps to create a foundation for the planned program. They have established a new State Planning Commission, a series of new industrialization ministries, and regional construction companies. A geological survey has been organized to search for additional sources of nonferrous minerals, "colored metals," and coal. The educational system is being reorganized to meet the need both for top level technicians and more skilled specialists to handle particular jobs as quickly as possible. About 219,700 students are reported to be enrolled in institutions of higher learning with emphasis being given to engineering.—News release.

CANADA

Arctic Posts

The completion of a joint United States-Canadian project for the erection of a chain of defense stations in the Canadian north is expected soon. The construction consists of radar stations and other installations starting on the coast of New Brunswick, stretching across Labrador, and into the Arctic. No information has been released on the exact details of the project.—News release.

AUSTRIA

Trade Agreement

Austria and Egypt recently signed a trade agreement providing for the exchange of Egyptian cotton and manganese in return for Austrian industrial equipment, electrical appliances, trucks, and prefabricated houses.—News release.

ITALY

Expanding Fleet

The 26,700-ton tanker, *Italmotor*, one of the largest in Italy's expanding fleet, was launched recently. It is 627 feet long and will carry a crew of 53.—News release.

CZECHOSLOVAKIA

Danube Canal

Work has been started on a tri-purpose canal between Bratislava and Komarno in Czechoslovakia it was recently announced. The project, drawing its water from the Danube River, will serve as a ship canal, provide water for a hydroelectric plant, and irrigation. The canal is being built along a stretch of the river about 40 miles long where it splits into a number of separate channels. One flows entirely through Hungarian territory, another entirely through Slovak territory, while a third forms the international boundary between Hungary and Czechoslovakia. This third arm has been the only artery for river-borne traffic.

The plan calls for diverting the traffic from this international channel into the canal flowing entirely through Czechoslovak territory, thus giving the Czechs control of the river at this point. An International Danube Commission is charged with the supervision of the river but has not been consulted on the changes. None of the countries using the Danube, which in addition to Hungary include Yugoslavia, Bulgaria, Rumania, the Soviet Union, Austria, and Germany, has been consulted either.—*The Christian Science Monitor.*

USSR

Rocket Base

Reliable evidence that the Soviets have rebuilt the former German rocket station at Peenemunde on the Baltic Sea has been obtained. Sketches showing the launching of Soviet rockets from this base have been smuggled out of East Germany. Six years ago the Soviets made a public display of destroying the site.

Improved forms of the *Wasserfall* rocket, a radio-guided, antiaircraft missile that was designed to operate at heights of 50,000 feet by the Germans, are included in the sketches. It is claimed that the ground testing of rocket motors can be heard regularly.—News release.

Trade Offensive

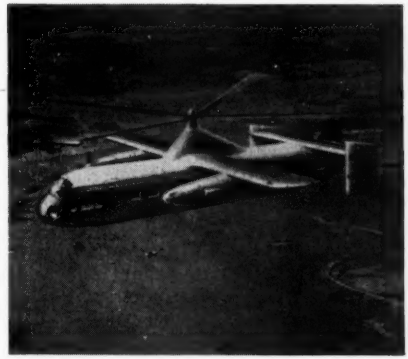
The long-expected trade offensive of the Soviet Union appears to have been launched with the signing of new trade pacts with France, Denmark, and other Western European nations. The trade maneuvers are believed to be two-fold—to relieve the economic plight of the satellite nations and to woo Western nations from economic and military ties with the United States.

The Soviets have recently completed a 3-year trade pact with the French calling for an exchange of goods worth 34 million dollars the first year. A Soviet-Danish pact calls for a 21-million-dollar deal under which five more cold-storage freighters will be built for the Soviets. In addition, Denmark will provide industrial machinery and food stuffs in return for wheat, cotton, iron ore, and asbestos. Sweden also announced a trade pact with the Soviet. Britain may buy 6½ million tons of wheat from the Soviet Union and has been studying the possible purchase of large quantities of timber. Other countries considering entering into trade agreements with the Soviet Union are Japan, Australia, Ceylon, India, Argentina, and Iran.—News release.

GREAT BRITAIN

Jet Helicopter

A jet helicopter, the *Rotodyne*, may be the answer to the need for a large intercity bus in Europe. It is being built at the request of the British Ministry of Supply and will hold from forty to fifty passengers. It has large loading doors at the



***Rotodyne* may be intercity bus of future.**

tail end of the fuselage which make it suitable for car ferry services or freight duty. The "Rotor-Coach" will be the first rotating wing aircraft to offer a direct transport challenge to the long-established, fixed-wing *DC-3 Dakota*.—News release.

Purchase Ammunition

A $12,200,000 contract for ammunition for NATO countries has been placed with Great Britain under the United States offshore procurement program. Under the program, the United States Armed Forces places contracts in Atlantic Pact countries for arms and other equipment to be used in the defense of these countries. This is done to bolster the economy of Western Europe and to increase its productive capacity. During the past fiscal year, orders totaling 387 million dollars in all categories were placed in the United Kingdom.—News release.

TIBET

Airfields

Chinese Communist forces occupying Tibet have built two airfields near the border of Nepal, one near the northeast frontier and the other on the northwest boundary, according to the Premier of Nepal.—News release.

TURKEY

Bosporus Span

A plan to build a suspension bridge spanning the Bosporus and connecting the Asian and European parts of Istanbul has been submitted by the Krupp works at the request of the Turkish Government. The German firm estimates that the 4,920-foot span would cost more than 71 million dollars and would take 4 years to build. The bridge would carry only automobile and pedestrian traffic and its purpose would be to relieve the congestion of the ferries across the Bosporus.—News release.

Jet Force

The most powerful jet force in the Middle East is being trained by United States Air Force instructors in Turkey. Three groups of 75 *F-84 Thunderjets* each are already in operation and by the end of the year a fourth group will be organized. This will give Turkey a total of 300 first-line jet fighters. Present plans call for an all-jet Turkish Air Force in the near future.—News release.

EGYPT

Big Army

Plans to raise 250,000 troops by the end of 1953 have been announced by Egypt's Minister of National Guidance. Egyptian arms factories are turning out the first consignments of Egyptian-made weapons to equip the army of new Liberation Commandos. The weapons are modeled after the British Bren and Sten guns. —News release.

CUBA

Epidemic

The mosquito carrier of yellow fever, the *Aedes Aegypti,* is responsible for an epidemic of equine encephalitis which has killed 25 persons and 20,000 horses in Cuba according to the Director General of Public Health. Teams of veterinarians are vaccinating horses in every province but the vaccine is useless if the horse has already been infected.—News release.

WESTERN GERMANY

Iceproof Road

Snow and ice—the bane of motorists—cannot form on a 550-yard stretch of highway near Hamburg. The road is coated with a tar mixed with an emulsion of chemicals. The chemicals, in conjunction with electromagnetic radiations from the earth, dissolve the snow and ice as fast as they form.

This highway will remain free of ice and snow even at minus 78 degrees Fahrenheit.—*Popular Mechanics Magazine.*

Rebuild Fleet

Dual purpose cargo ships will get the main emphasis as Western Germany starts to rebuild its passenger-shipping fleet. The first ship, now under construction, is a combined freight and passenger steamer of 9,000 tons. It will cost $3,700,000, have a speed of 17.5 knots, and accommodate 80 passengers. It is planned to build five similar ships by the end of 1954. It will be some time before Germany can hope to regain her former position in the shipping world. Only 120,000 tons of a 4-million-ton merchant fleet remained at the end of the war and it is only since April 1951 that Germany has been allowed to build large and fast ships.

Many trained personnel remain from the prewar shipping lines but it is also planned to train younger persons for the new ships as they come into service.—News release.

FOREIGN MILITARY DIGESTS

The Soviet Army

Translated and digested by the MILITARY REVIEW from an article by Major B. E. M. de Pue in "L'Armée-La Nation" (Belgium) April, May, and June 1953.

NO MILITARY problem can be solved without the most accurate knowledge of the enemy, his possibilities, weaknesses, and potential. This knowledge is necessary at all levels to bring together the means necessary to achieve the objective in mind, attain the maximum results from those means, and ensure freedom of action.

In order to ascertain the capabilities of the Soviet Army, the military officer, particularly of the intelligence service, must be able to place himself in the position of the potential enemy, if he is to learn to think and react like him. The question is not: "What should I do in his place?" for that would be to pre-suppose an enemy in no way different from ourselves. The question is: "What should *he* do under the existing conditions?" for it is necessary to put oneself in his place and to have an insight into his mentality and his methods. We then see how complex a task it is to determine the real strength of the armed forces of a great power. It is not enough to assess it in terms of manpower. There are several other factors which play a part:

1. History, because of the influence which it has exercised on the psychology of the Russian people.
2. Characteristics of the combatant, his training, discipline, and morale.
3. Characteristics of his equipment.
4. Organization and composition of large units, their mission and strength.
5. Quality of the command.
6. Tactical methods.
7. Logistic system.
8. Political conditions.
9. Geographical conditions.
10. Economic conditions in relation to combat supply.

In the case in which we are dealing, there is one great difficulty: that of collecting information in a totalitarian state. While in a democratic state, 90 percent of the necessary information is obtainable through the press and parliamentary debates, in a totalitarian state the proportion is reversed and many essential details remain a closed book even to our intelligence services.

It is, however, possible to give a general picture of the Soviet Army.

The history of the Russian people is characterized by a pendulum movement be-

tween "contact with the West" and "isolation."

The first period of interest to us is that between the years 900 and 1200, when the Slavic kingdom, with Kiev as capital, maintained close relations with the peoples of the West: we must not forget that at that time the Slavic peoples had pushed far into the European area. The Mongol invasion of Genghis Khan in the thirteenth century was the cause of a total breach of those relations and an isolation which lasted until the end of the seventeenth century, two hundred years after the retreat of the Tartars. This isolation has exercised an influence on Russian behavior up to the present time. Even their Christian religion, inherited from Constantinople, estranged them from the West which practiced the Roman Catholic faith.

Thus, in the thirteenth century, the Russians evacuated the southern plains, and new principalities were created in the forests, further northward. Of those principalities, those adjacent to Sweden and Lithuania were gradually absorbed by these states while the others were obliged to acknowledge the sovereignty of the Kahn without their political organization being affected. Provided that the tributes were regularly paid they could quarrel and make war as they liked on one another.

From father to son, the princes of Muscovy assiduously took advantage of this state of affairs to extend their territory and become masters of other principalities by all means possible: by force and cunning in their dealings with the other Russian princes and by servile submission to the Khan. At the end of the fifteenth century they were so powerful that they were able to shake off the yoke of the Tartar empire which was weakened by internal dissension.

The prince reigning at that time in Moscow was, for the first time, called *Gosoedar* (sole sovereign) of all the Russians. Almost at the same time, the Moslems seized Constantinople; the prince married the niece of the last emperor and adopted the double-headed eagle as his emblem. From that time onward the princes of Moscow assumed the right to protect orthodox Christianity. Moscow became the center of attraction for all Russian territories under foreign dominations and also the Balkan Slavs who were subject to the Sultan. Russian imperialism was born and the desire for power and expansion never again waned, except perhaps for a few years after the Revolution of 1917.

Relations with the West were re-established by Peter the Great (1672-1725) who, by strenuous work and by employing violence, transformed backward Muscovy into a modern empire modeled on Western civilization. Russia continued to look to the West until the outbreak of the Crimean War in 1856. The resultant reaction impelled her to seek compensation in the East until the Russo-Japanese War of 1905 brought about the change which was finally to draw her into World War I and to disaster.

Russia could not escape the East-West antithesis during the period following the Russo-Japanese War. She now adopted another attitude, but the fact remained. In the new setting the first Bolshevists, following 1917, leaned toward the West hoping that Russia would propagate the revolution in Europe and America and cheerfully accepting, in their zeal for international expansion, the loss of an enormous area. More realistically, Stalin proclaimed himself the national leader of the Soviet fatherland in 1924. He recovered the lost territories during World War II and provided himself with an outer wall of satellites—a defensive rampart, perhaps, or a springboard for the next sally in the cold war, if possible—in a shooting war if necessary.

Through history we perceive the traditional policy of the Russians:

The Soviet industry produces armaments that are highly standardized and as simple as possible. This simplicity, combined with good handling characteristics and rugged construction is characteristic of Soviet armament. Above, two captured Soviet-made self-propelled *SU-76* guns. Below, a Soviet-made 37-mm gun.—Department of Defense photos.

1. Expansion by the employment of cunning or force.

a. Geographical, extending to the nearest natural frontier.

b. Racial (Pan-slavism).

c. Ideological (Orthodox religion, communism).

2. If defeated, retreat until the next opportunity.

3. A policy of confusion, for example, the German-Russian Pact of 1939.

Psychology of the Russian

History has left its mark on the character of the Russian people. From the period of Mongol domination the Russian has retained the mentality and the habits of a subject people and, through necessity, he has learned how to be false and to scheme, to defer the time of combat until, by the gradual accumulation of resources and patient waiting, conditions turn in his favor.

Serfdom led to the following consequences: negligence in preparing for action of any kind, fear of initiative and responsibility with, on the other hand, an astonishing aptitude for making the best of a difficult situation.

Centuries of war and isolation have engendered in him a profound distrust of every foreigner, especially those who, by a higher standard of living and industrial superiority, seem to constitute a menace.

Recent successes and propaganda seem to have given him more self-confidence through the knowledge of his achievements and capabilities.

Accustomed to an authoritarian government, supported by an excessively severe police force, he is possessed with the idea of the omnipotence of the state—the supreme body. Traditionally, the Russian is conscious of the community and wishes to remain in harmony with it. He acknowledges that the individual can be sacrificed to this community.

By nature, however, the Russian is jovial, eager to learn, keen-minded—although more intuitive than intelligent—amiable, but of weak character. This renders him capable of the worst excesses in which he respects neither person nor thing. Being, for the most part, rural dwellers or peasants, they have the instincts of such people: circumspection, hesitation, mental reservations, and a highly developed religious sense—for many of them, communism is a faith in spite of its materialistic philosophy.

History of the Army

To arrive at a correct understanding of the Soviet Army today, it is well to take a brief glance at its evolution.

We must recall the Russian strategy in operation which was employed centuries before the Revolution. This strategy was first applied instinctively and was later laid down as a principle by Peter the Great:

> Avoid engaging in combat with the main forces of the enemy; draw him deeply within the territory; harass his lines of communication as they are extended and tire him before attacking without respite and overwhelming him.

Every time that Russia deviated from these principles the result was fatal.

Following the Revolution of 1917, there existed: the General Staff, the recruiting bureaus, the officers' schools and military academies; they continued to receive orders and to draw salaries. Line officers were scattered in various directions: to the counterrevolutionaries (among them several reserve officers); to the Communists (for example Brussilov, the hero of Galicia and the Carpathians in 1914-17, and Shaposhnikov, the personal military advisor to Stalin in 1941-45); others returned to their country with rank restored (for example Mannerheim); the majority were in prison or were expecting arrest.

The threat of counterrevolution compelled the new regime to re-establish an army. The decree instituting the Red

Army of Workers and Peasants was published on 23 February 1918 (an event celebrated annually since then).

First of all, the former units were employed under commanders chosen by the men; this was a complete failure. Then came the volunteer militia in the different federated states, but the lack of volunteers and unity of command also doomed this to failure.

As early as April 1918, it was decided to introduce compulsory military service for workers and peasants (the other classes had no legal existence). An exception was made in the case of officers of the former army because they were required to train the cadre of the reorganized armed forces. They were mobilized (even those who were in prison) to serve as technical advisors to the new leaders of proletarian origin and as instructors in the schools. Scorning their personal preferences and ignoring the suspicion with which they were regarded—as evidenced by the police surveillance—they worked to reorganize the armed forces of their country.

The Army kept pace with the internal development of the country. In 1921, following suppression of the counterrevolution, the New Economic Policy (NEP) was promulgated. The NEP acted as a brake on the brutal reform policy and even represented a return to more liberal conditions. Surveillance was reduced within the Army. The Army became more broad-minded and the contrast between the officers lessened.

The year 1928 brought another change. Stalin became master and set as his objectives, a program of industrialization within a socialistic, but national, framework, and the militarization of the country. To achieve these aims it was essential to maintain peaceful relations with other countries; hence the non-aggression pacts with other nations, and the League of Nations. The Army gained in power and cohesion. While the pre-1917 officers identified themselves with the new arrangement and won confidence (several even joined the Party), the officers produced by the Revolution became more firmly established. They were no longer leaders of bands of armed civilians, but true officers with the military and traditional mentality of any regular armed force.

In 1936, we saw the stabilization of the regime and the introduction of the new constitution, which gave the Army its rightful place by stipulating that military service and the defense of the fatherland constituted an honor and a sacred duty for all *citizens*. Subsequently, the service grades were progressively established; gold epaulets were returned to the officers. The Revolution was left behind; the evolution of a political army, confined to a class, into a national army was completed.

Combat Characteristics

The Soviet soldier is extremely brave in attack and stubborn in defense. His life means little to him, the life of others still less, for he considers the opponent as his personal enemy and is merciless in combat.

He possesses, in addition, great physical endurance; he is fitted for open-air life in a severe climate, very skillful in finding his bearings, crossing difficult terrain, and utilizing raw natural products. His skill in improvization is remarkable; with primitive tools he can build shelters, sleds, carts, and even bridges. He makes particularly good use of earthworks and camouflage.

The Soviet soldier does not know the meaning of comfort, is accustomed to frugal living and accepts privations without complaining for he has never known conditions that were better.

The wounded man regards it as normal that one should repair and withdraw the

tank and retrieve his weapons before dreaming of evacuating himself.

In spite of his natural courage, he is easily disturbed by the unknown, but he quickly adapts himself to it and is then less easily affected by it than are the soldiers of more civilized nations.

We should like to draw attention to the erroneous opinion which holds that the Russian is only a mass fighter. There is no doubt that he, more than the Western soldier, is capable of demonstrating a characteristic passion for mass combat, but on the other hand, his individual bravery is demonstrated in guerrilla warfare. To a greater extent than the soldier of the regular army, he is imbued with a political concept directed against a government foreign to him. When independent of the army machine, he is a skillful combatant, varying his methods with much imagination. The Germans had some experience with this type of combatant.

On the other hand, according to those who have had the opportunity to observe him at home as well as abroad, there is reason to believe that the Soviet soldier, far away from his homeland, will be a less formidable opponent when it is no longer a question of defending or retaking his own territory. Abroad, especially in countries in which the standard of living is higher, he has displayed greed, lack of discipline, indolence, cynicism, and a critical approach toward his political regime.

Soviet Matériel

Soviet industry produces weapons, machines, and equipment which are very standardized and as simple as possible (facilitating training). However, they have proved to be as efficacious as ours. This simplicity, combined with ease in handling and strong construction, is characteristic of Soviet armament.

In addition to the rifle, the automatic rifle, the sub-machine gun, the Lewis gun and machine gun (all of 7.62-mm) the Soviet infantry employs the 14.5-mm antitank gun which weighs 44 pounds and has a penetrating power of 30-mm at 110 yards. It is equipped with a 12.7-mm antiaircraft machine gun which is also employed by the artillery of the mechanized and armored divisions and the antiaircraft artillery divisions.

The Soviets devote a great deal of attention to their artillery. It is abundant and varied and not inferior to any other in performance at any rate.

Mortars

Mortars are employed in great numbers. The mass production of mortars was decreed during the last war because of the ease with which they could be produced and the fact that they could be moved by hand into the infantry lines. We find in the infantry regiments 82- and 120-mm calibers; in the artillery of the mechanized and armored divisions, the 120-mm; and in the artillery of the infantry divisions, the 160-mm. Of the towed-gun type there are, in the divisional artillery, the 76.2-mm gun and 122-mm howitzer; and in the artillery of the higher echelons, the 122-mm gun, 152- and 203-mm howitzers, and 152-mm howitzer-gun.

The Soviets have a special affection for the self-propelled type of artillery because of its ability to follow close on the heels of the troops in action and they are producing it in large quantities. Already the infantry regiments are equipped with 76-mm self-propelled guns; there are, in addition, the 122- and 152-mm self-propelled guns.

In the artillery of the mechanized and armored divisions there is the rocket-launcher *M-13;* in the artillery divisions, the rocket-launcher *M-30.*

In the case of antitank artillery, the towed-gun types are the 57-mm, the 85-mm, and the 100-mm. The self-propelled types are the 85- and the 100-mm.

These are included in the armament of the infantry battalions (the 57-mm); the divisional and corps artillery, the antitank brigades of the armies, of army groups and the general reserve.

On the other hand, all the artillery, particularly the 76.2-mm gun, is effectively used in antitank combat.

In the case of antiaircraft artillery, they have the 37-mm light gun (towed and self-propelled), and the heavy 85-mm gun.

Tanks

Throughout World War II, the Soviet tanks were a match for the German tanks, if, indeed, they were not superior toward the end of the war.

Although there are models of light tanks weighing 15 tons, the Soviets have concentrated their attention on the medium tank of the *T-34* type and the heavy tank of the *Stalin* type, weighing 30 and 45 tons respectively, and they are constantly improving them. The *Stalin* has no competitor at present, except perhaps the *Centurion*.

The Soviet tanks run just as efficiently in severe, cold weather as in summer; as easily in snow as in a sea of mud. This is due to the power of the engine and the width of the tracks. On the other hand, their low silhouette and their streamlined surfaces render them less vulnerable. Their turrets are extraordinarily strong. However, their construction lacks finish and their armored plating is roughly welded; it is estimated that 30 to 40 percent have to be rejected as they leave the factory, but those which have been put into operation have been tested and have given satisfaction.

Other weaknesses: the inaccuracy of their sights (it was not without reason that the Zeiss optical works and others were transferred to the Soviet Union) and the lack of radio equipment (which hinders the flexible and rapid employment of armored units).

During the war the Soviet Union made a special effort to build a tactical air force, that is, an air force designed to collaborate directly with the ground forces. The extent of the territory, the scope of the operations, and massed employment against the German air forces, superior in quality, created such a great demand for assault, fighter, and reconnaissance planes that the factories had to confine their efforts to this field. Since the war, the Soviet Union is also building up a strategic air force (heavy bombers) capable of carrying the atom bomb a great distance.

The quality of their planes has improved considerably since World War II. Except for a few original models, the Soviets have built only copies, such as the *B-29* of the United States and the motor which the British sold to them after the war.

In the field of the jet motor, they are moving ahead. Their present planes are able to intercept the best heavy bombers of the United States. The North Atlantic Treaty Organization will find it very difficult to regain superiority and to retain it.

Organization

The Supreme Soviet (federal legislative authority) meets twice a year. Between sessions its powers are transferred to the Presidium of the Supreme Soviet.

The Council of Ministers (federal executive authority), under the chairmanship of Malenkov, consists of a cabinet of four vice-chairmen and some ministers. After the death of Stalin, the number of members of this council was greatly reduced; some ministries were amalgamated and the vice-chairmen themselves retain a portfolio, while under the previous system, they co-ordinated the activities of different ministries.

Ministry of War

Among the agencies subordinate to the Ministry of War, are:

1. The headquarters of the ground

forces, exercising direct control of the fronts (army groups) of the field army. If several fronts are involved in the same operation, the headquarters sends a command group.

2. The headquarters of the air force.

3. The headquarters of the rear services.

With regard to the ground forces, a front normally consists of three infantry armies, one mechanized army, and one artillery corps. In turn, the infantry army consists of three infantry corps, one field artillery division, and one antiaircraft artillery division. The mechanized army has no intermediate echelon; it directly controls two armored divisions and two mechanized divisions.

Rather than give the organization of the division, it might be better to compare the Soviet with the United States division. Roughly speaking, the United States division has a strength of 18,000 to 19,000 men, and the Soviet, 11,000 to 12,000 men. However, in the latter, the proportion of combatants, to the total strength of the services is much higher.

The United States infantry division is better supplied with weapons, but in the Soviet division the proportion of weapons to the total number of combatants is higher.

In the artillery there is equality only in the case of light antiaircraft weapons. With regard to tanks, the United States division is superior.

All in all, the firepower of the Soviet infantry division comes very close to that of a United States division. The Soviet division is, however, less capable of sustaining prolonged actions.

The Soviet mechanized division consists of an excellent combination of infantry and tanks and it is the mechanized, not the armored division, which approximates the United States armored division. By making this comparison it is clear that the combat effectiveness, mobility, and firepower of the Soviet division are, in proportion to its strength, greater than those of the United States division.

A Soviet armored division could not engage in an offensive or defensive action for a long period without the assistance of other better-balanced formations. It should be regarded as an armored support group.

In the case of the Soviet's nondivisional artillery, certain confusion arises over its designation which gives rise to the belief that those large formations can be engaged in combat as infantry and armored divisions. This is not so. The formations correspond to the artillery groups which we know in our forces with the army echelon and army group. In comparing an army group of the United States type with a Soviet type front we find a Soviet superiority of about one-third in field artillery but an incomprehensible inferiority in antiaircraft artillery.

General Reserve

The Soviets make provision for a considerable general reserve of independent brigades and regiments of tanks and artillery. These units are used as reinforcements according to the circumstances of the army groups involved.

Contrary to Western methods, the tactical air force is under the command of the ground forces. A force of about 1,000 planes is allotted to each army group.

This is subdivided into fighter, assault, and bomber divisions, and reconnaissance regiments. Mixed divisions can be formed with the elements of these homogeneous divisions and can be placed under the command of army commanders.

A large general reserve makes it possible to reinforce one or more army groups for specified operations.

Strength of Forces

In its ground force it is estimated that the Soviet Union has from 175 to 200

divisions under arms—composed of over 100 infantry, about 30 armored or mechanized, and the remainder being artillery divisions. The combined strength of these units numbers about 2,700,000 men. This indicates that all the divisions are not at full strength. It is estimated that only about 50 of the divisions are at full strength. In a month's time, the strength of the ground forces can be doubled and the 200 divisions will then be joined with their supporting troops. In 3 month's time, the number of divisions can be raised to approximately 260 to 300, and in a year's time, the number can exceed 500. This feat was actually accomplished during the last war.

The Soviet Air Force has nearly 600,000 men. The estimates on the number of planes are exceedingly variable but the more reasonable show close to 20,000 combat planes, comprising 10,000 pursuit planes and from 1,000 to 2,000 bombers.

These forces are stationed in the following theaters: the Far East; the European section of the Soviet Union, the Northern, Central, and Southern theaters; and the Caucasus. Stationed in the occupied countries are from 24 to 30 divisions and in the European section of the Soviet Union are from 70 to 80 divisions.

Command

In determining the capabilities of armed forces, it is most important to know to what extent the government is free with respect to the will of the people to conduct war, what is the ability of the army commanders, and what is the quality of the personnel in the army.

Under a dictatorship, the decision to resort to war and the waging of this war do not require the assent of the parliament nor of the people. Both the political and the military authority are combined in one person. The desires of pretended allies are not considered either as they are but docile satellites.

The major commanders are a carefully selected, elite class, selected and aided by trained staffs. The great leaders who came out of the Revolution and were not liquidated are relegated to secondary or honorary positions.

In the lower echelons, tactical qualities do not appear to be very well developed as plans are conceived, at the lowest, on the army level and a lack of initiative is shown. Presently, attempts to remedy this are being undertaken but it is thought that fear of responsibility, which is inherent in the race and abeted by the political system, will limit the results in this field. The officers, however, are good trainers of men and the majority of them have had combat experience as the best officers were not demobilized. They have a good understanding of the task they have been assigned and they are conscientious.

Service and Training Period

Military duty consists of an active period of duty extending over 5 years, beginning at the age of 19, with an actual period of 30 to 40 months under arms, and service in the first and second reserves pending for 16 years. Professional soldiers are recruited from the militia who are enlisted during their period of service or after discharge. Civilians between the ages of 17 and 21 desiring to be professional officers enroll in military schools. It takes 3 years for infantry and cavalry, 4 years for the artillery, engineers, and other technical arms. Specialization is begun the first year.

For advanced military studies there are the specialized military academies, such as the basic and advanced staff schools, the artillery, the armored, and the air force academies. Entrance requirements are very severe and the course takes 3 years.

Military training is compulsory (law of September 1939) and so-called "co-operating" societies for the ground, air, and

naval forces have been created. They carry on their activities for the entire nation, taking youths at ages of from 15 to 16 years, and again taking the men who are coming out of the service. In pre-military ages, these societies train youths in shooting, piloting of airplanes, and parachute jumping. In the postmilitary age group, they subject their members to a weekly session so as not to lose the training that has been acquired and they go as far as battalion maneuvers under actual fire.

The reserve cadre is trained in the civil schools. Beginning at the age of 14 years, the pupils are forced to take courses imparting military training, 75 to 90 hours according to the arm, in addition to a certain number of weeks of field exercises each year. These courses are terminated with examinations, the results of which are used in determining the individual's grade in the Army. The students of the better institutions who successfully pass the examinations enter the Army as lieutenants.

Discipline and Morale

The disciplinary regulation of 1946 was the fourth since the Revolution, each one being more severe than the preceding. The most recent, calling for unconditional obedience and iron discipline, is reminiscent of the Czarist regime of 1869. The right of protest is very limited. Officers, noncommissioned officers, and enlisted men who do not reach the level of training demanded are placed in disciplinary units.

Noncommissioned officers may punish their inferiors as officers do but the punishments which each grade may inflict are well defined. One peculiarity is the duty of denunciation. There are even penalties for those who fail to point out the faults of their equals. There are also a large number of rewards for meritorious conduct.

The regulations of 1946 emphasize strongly the differences of grade, with the punishments and rewards being different from grade to grade. There are provisions for the institution of courts of honor for the officers.

Soldier's Oath

Nothing, however, brings out better the evolution of the Soviet Army, than the oath that must be taken by each soldier. There is no longer talk of "engaging himself, as a son of the people and of a worker, and before the working classes of the Union of the Soviet Socialist Republics and of the entire world, to devote himself to the liberation of all workers and to serve the cause of socialism and fraternity among the nations." The oath he takes today is:

> I, a citizen of the Union of Soviet Socialist Republics, in entering the ranks of the Soviet Army, do solemnly swear and bind myself to be a loyal, brave, disciplined and vigilent soldier, to strictly guard military secrets and secrets of state, to execute without question the military regulations and the orders of the officers and chiefs. I am always ready, on the order of the workers and peasants government, to march to the defense of my fatherland and, as a soldier of the Soviet Army, I swear to defend it bravely, skillfully, worthily, and loyally, neither sparing my blood nor my life itself, for victory over the enemy.

This military oath is unquestionably an effective means of building morale in the Soviet troops who must know it by heart and repeat it often. The Soviet leaders are greatly interested in morale as history has shown that the morale of the Soviet people has weathered a great many reverses—heavy losses are looked upon as normal. Only an irremediable collapse is capable of affecting morale.

Political Control

The authorities attach great importance to political education in the Army and a great deal of time is devoted to this. Political control is extremely severe. This prevents the soldiers from allowing them-

selves to be affected by other influences than those which are in harmony with the Soviet state. All news, recreation, literature, and speech are controlled and colored in accordance with the Party line from the top to the bottom of the military hierarchy.

At the top, forming a part of the Ministry of the Army, is the Chief Political Directorate which receives its directives from the Central Committee. In all echelons there exists a political counselor for the military commander. They were previously called political commissars but today are known as "secondary commanders charged with political questions." This new title followed the suppression in 1942 of the dualistic command, wherein every order, even an operational one, required the signature of the political commissar to be valid. This procedure proved disastrous to military operations. The political counselor is in fact a spy of the Party who can send secret reports through political channels which are parallel with those of the military.

He is also charged with propaganda and welfare activities. In this task he is aided by cells of the members of the Communist Party, which exist in all units of the Army from the company up. Members of the Party consider themselves as auxiliaries of the military commander and consider it a great glory to themselves to be examples of earnestness and worthiness. In combat they must always be in the lead exhorting their comrades to greater action. Their losses in the last war were great and the number of their decorations were high.

The Soviet soldier possesses great physical endurance, is a skillful combatant, and shows natural courage and adaptability. Above, Soviet artillerymen correcting fire.

Tactical Methods

It is generally noted that the Soviets seek surprise by means of night operations, use of terrain which is considered impracticable, operations under unfavorable weather conditions, infiltration, decep-

tive maneuvers, and camouflage. They show a decided lack of flexibility because their plans are generally too rigid, following a schematic pattern which leaves little room for initiative. There is a great fear of the disciplinary consequences of defeat. There are very severe measures for the commander who orders a retreat without first being authorized to do so or who fails to seize his assigned objective. This results in continuing desperate attacks and allowing themselves to be encircled uselessly in defensive positions. As a result, the units are excellent when it has been possible to predict the action of the enemy, but they are much less maneuverable than Western units and often show defects in fluid situations.

The artillery puts a great number of pieces into the line—in an offensive action from 402 to 480 per mile—but it does not obtain the results that we would from an equal mass. A large proportion of the pieces—even those of large caliber—is pushed into the front line for the purpose of direct fire, the officers feeling that instructions can be relayed to the gunners more rapidly and that liaison with the infantry is more certain. The concentration of several battalions or regiments of artillery in indirect fire on unexpected objectives or positions is difficult because of a lack of liaison between artillery units and the state of training of their officers. During the last war, nevertheless, in a prepared action, their fire was terrifying—the quantity of artillery employed compensated for the quality of the gunners, and the amounts of ammunition used made up for their lack of accuracy.

In a defensive action the occupants of the principal position are held responsible for unyielding resistance. In the event of a penetration, the field artillery participates in direct antitank fire and each gun must destroy a tank. Behind the main line, a second position is prepared but not occupied. Reserve units are brought there in the event of threat in a given sector for counterattack or counterpenetration. The division commander has a small reserve at his disposal which cannot intervene to any large extent in the battle. The order must come from higher up.

In an offensive action, the advance toward the enemy is carried out in much the same manner as we do. There are advance reconnaissance detachments. Next come armored divisions which contain or destroy the resistance they are capable of and bypass the stronger resistance leaving it for the main body—which under the protection of the armored divisions has advanced and deployed for the attack. The attack is characterized by concentration of forces on narrow fronts, and the mass employment of artillery, tanks, and aviation. Confidence in the defensive aptitude of their troops, permits the Soviets to sometimes weaken dangerously other sectors and to reserve the maximum number for the attack.

The great number of weapons placed under the commander, even of companies, greatly increases this power but exercises a braking action on speed. However, the great density of the units, their inflexibility, and the spirit of disdain for human life, induce enormous losses. There appears, at present, a tendency to reduce density and to better proportion the units assigned to the various attacks. It is possible that the fear of loosening the tight control over the units will not permit this to become a fact.

The Soviet Army always aims at double envelopment, whether it is a small unit operation or an army group. The first waves—with enormous fire support from artillery, tanks, and aviation—penetrate to their objectives, destroying or bypassing what opposition they meet. The bypassed resistance is left to the succeeding waves. The reserve divisions are close behind in order to pass through the troops of the first wave and maintain the impetus

of the attack, to widen the breach, to hold the outside circle, and to attack the inner circle.

A division attacks on a front of 1,650 to 3,300 yards and rarely possesses depth. The corps usually disposes its divisions in a column, each division following the preceding one at a short distance. These divisions give mass and depth to the attack rather than operating as reserves. The handling of reserves is left to the army command. The execution of this maneuver is possible only with strong superiority—during World War II, it succeeded only with a superiority of 4 to 1.

Exploitation consists in the simultaneous or consecutive execution of the annihilation of the encircled forces, and of pursuit. The annihilation is effected by concentric attacks tending toward the successive destruction of the pockets. Pursuit is based on attempts at surprise and speed. An exploitation force composed of mechanized and armored divisions is directed toward objectives from 200 to 300 miles away. This force, followed by infantry divisions on foot or in trucks, creates a narrow but deep corridor which is widened as quickly as possible. The mission may be to establish a bridgehead for subsequent operations, to seize a communication center, or to cut off large enemy forces.

Logistical System

The Soviet Army logistical system is characterized by the following:

1. A rigorous exploitation of local resources.

2. Centralization to the highest degree. A single organization on the departmental level, the Headquarters of the Rear Services, controls all supply, resulting in great flexibility.

3. Standardization of equipment, leading to greater ease in replacement supplies, and in the supply of ammunition.

4. A very thorough salvaging of damaged matériel and utilization of the matériel captured from the enemy. The troops are especially trained for this work.

5. No major campaign is undertaken without the necessary depots being established—fuel and ammunition have priority over all other types of supplies.

6. Extensive use of railways as far forward as possible.

7. The organization which is occupied with personnel matters is very reduced as no data is filed for personnel below the grade of major.

Economy

It is difficult to obtain information concerning the possibility of the Soviet economy sustaining the armed forces over a long period of time in case of war. This secret is jealously guarded and indiscretion concerning this subject is severly punished. To deceive the curious, counterinformation is employed on a large scale.

It is known that during the war, the Soviets were able to keep their formidable war machine in working order despite enormous losses. It is true that the allies furnished her a great deal, but nevertheless, this was but a small percent of what she herself produced. The Soviets minimize this aid but they overlook the fact that it came at a time when it was needed most.

The Soviet soil produces most of the foods and raw materials necessary for her normal needs. Because the State desires to create a sufficient reserve of war equipment to cover a general mobilization, she lacks certain prime strategic materials such as rubber, copper, tin, lead, and aluminum. Until 1950 she received these from the allies—and then until 1951 from China. The desertion of Tito deprived her of important deliveries of copper and lead.

A second weakness is the scarcity of machine tools, electrical and industrial

equipment, and electric power. The Western blockade is terribly troublesome because it renders the obtaining of machines and raw materials more difficult. The Government leaves no stone unturned to break this blockade and for this reason it recently called the Moscow conference. She still obtains a great deal from the West through go-betweens—price is of no importance.

One great advantage to Soviet industry, in case of war, is its great geographic dispersion. On the other hand, this dispersion renders still more acute the disadvantages of a poorly developed railway and highway network which is insufficient for joining the production areas with the probable zones of operation. The extension and improvement of this network will require some time.

The last 5-year plan shows a new effort on the part of the Soviets to free themselves from all dependence on the outside world. It devotes particular attention to production means—especially those necessary for war.

The scarcity of specialists is tending to disappear with the deportation of persons from other countries to the Soviet Union and the establishment of industrial schools. By law, the Labor Service is obligatory for both sexes and results in from 800,000 to 1,000,000 persons being recruited yearly.

The Service consists of a schooling period of from 6 months to 2 years, followed by 4 additional years of work with the armed forces. In this manner there were recruited over 400,000 persons in 1946, 700,000 in 1947, and 1,100,000 in 1950.

Despite the weaknesses of the Soviet economic system, we may rest assured that, in the event of war, the country will find the means for maintaining 500 to 600 divisions if the allies do not succeed in completely destroying the industrial plants and railway network.

Geography

The Soviet Union is a continental country without such obstacles as the English Channel or Atlantic Ocean which make it necessary to maintain a large force under arms for protection. If attacked, she relies on the broad expanse of territory which allows her unlimited possibilities for strategic maneuver and counteroffensive while her enemy dangerously lengthens his lines of communication.

The geography of the Soviet Union offers her great possibilities for attack against the non-Communist world. She could launch an offensive by way of the Mediterranean flank, through Yugoslavia and Turkey in the direction of North Africa, with the purpose of turning fortress Europe on the south and driving the American Air Force from the Middle East and North Africa. At the same time, a secondary attack could attempt to reach the Persian Gulf and seize possession of the oil sources.

The theater of decisive battle, however, would be western Europe. There the Soviet offensive could deploy in three directions: in the center toward the Rhine and then to the English Channel and the Pyrenees; in the south through Austria toward the southern flank of the European defense; and in the north from Finland and the Baltic states in an effort to turn the northern, maritime flank—a triphibian operation using ground, air, and sea.

Conclusions

If the Soviets decided to carry out the plans outlined, they could do it in either of two ways:

1. By surprise attacks on the different fronts or on one front with large numbers of strategic reserves being held back for the purpose of fending off allied attacks on other fronts.

2. By means of an all-out offensive after a partial or general mobilization in which surprise would probably be lacking.

In the event of an offensive, the Soviets would be faced with the problem of extended lines of comunication. The vastness of their territory would be an obstacle, but perhaps they hope to seize the industries of the West intact. The Western powers could probably count more on the population behind the lines for help than could the Soviets.

The Western powers have at their disposal in Europe, at the present time, 25 active divisions, 18 of which are in Germany, for the purpose of forestalling an initial attack by the Soviet. The objective of 25 reserve divisions by the end of 1952 was not realized. The Lisbon conference provided for 96 divisions by 1954 but at the Atlantic Council of December 1952 no objective was established.

A way must be found, using a minimum of forces, to bar the way to the Atlantic to the Soviet after an initial attack until the Western forces can be reinforced progressively. Only power and force can halt Soviet imperialism. The Soviet Union certainly does not desire war as long as it can gain its ends by other means. If these means are not successful, only powerful armed forces will stop it from risking its existence in a world conflict.

The Problem of Civilian Refugees in a European War

Digested by the MILITARY REVIEW from an article by
Lieutenant Colonel Oswald Stein, British Army.

This is the second in a series of two articles on this subject. The first article of this series appeared in the February 1953 issue. This part deals with the organization and planning phase.—The Editor.

IN THE earlier part of this study, the nature of the problem and the general lines of a suggested solution were described. It is now proposed to consider in some detail the organization of a planning team and to draw up a program of work, which should be completed as early as possible.

Organization

The organization of the planning team should be as simple as possible, but plans should be prepared in the minutest detail for the immediate expansion of this team into an executive staff at the moment general mobilization is ordered, or even earlier if it is politically feasible.

It is suggested that the original team should consist of a director, an assistant director (AD), a deputy assistant director (DAD), a stenographer, two general clerks, and a driver and staff car. In the earlier stages of planning, no specialization of duties should be indulged in, but everyone should work on the task of the moment, as allotted by the director; but before long, as the shape of things begins to appear, the duties of the three officers should be somewhat as follows:

Director.—General control and supervision of the work of the team; liaison on policy with Supreme Headquarters Allied Powers in Europe (SHAPE) and North Atlantic Treaty Organization (NATO) branches concerned, and with the civil departments and military services of the countries involved; and liaison with voluntary agencies in NATO and other countries in connection with the allocation of resources and personnel.

Assistant director.—Selection of roads (in conjunction with the military authorities); movement control and direction of refugees into selected roads, route dis-

cipline, sign-posting; break-down recovery services; and location of camps. (*Note:* In the first and last named tasks he will have to consult very closely with the DAD in order to ensure good supply lines.)

Deputy assistant director.—Administration and control of camps, supplies, catering and kitchen services, medical arrangements, and welfare.

Planning

The very first task must obviously be to discover against what possible enemy lines of attack the defense is planning. It is not necessary, or indeed desirable, that the defense plans should be disclosed to the team, nor is it likely that they would be divulged. What must be known, however, is, in the case of each defense plan in existence—what is the location and estimated frontage of assault, what is the likely axis of attack, and what is the expected initial speed of advance, provided such an estimate can be obtained. In addition, it must be known either what roads are to be allotted to refugee movement, or, alternatively, what roads will be forbidden to refugee movement and reserved for military traffic. The latter alternative would be immeasurably the better for our purpose as affording some latitude in the choice of routes.

Having extracted this information, it will be first desirable to estimate the approximate number of refugees likely to be encountered on each line of enemy advance. This will probably best be done by consulting maps, population figures, and other vital statistics. It will then be necessary to start the reconnaissance of the available routes for each plan. At this stage, the various reconnaissances should be made as far as possible by all three officers jointly, in order to get a general idea of the lie of the land and to enable each one to point out his own particular problems. For instance, while the AD would presumably choose reasonably wide, well-surfaced roads, as free as possible from steep gradients, narrow defiles, or precipitous drops on either side, the DAD would be concerned to ensure suitable staging camp sites at appropriate intervals and situated conveniently for access to supply and POL dumps. It is particularly advisable to avoid roads separated from these latter points by main military routes, because the greatest flow of refugees is likely to be coincident with the peak military traffic, and camps might easily be cut off from their supplies.

Another point to be decided during these preliminary surveys is at what point on the selected road will controlled refugee traffic commence. This will be mainly governed by the existence and location of lateral "feeder" roads, by means of which the refugees can be shepherded on to the selected route.

From now on each officer will work on his own problems, while, of course, keeping in close contact with his colleagues. The director must consult the various military authorities concerned to discover what assistance in skilled and unskilled personnel and in material resources he may expect from army sources. This in itself will be no mean task, and will probably involve approaches to the war departments of each NATO country. Having then roughly assessed his deficiencies, appeals will have to be made to the various appropriate voluntary bodies in each country involved and, as stated above, in neutral countries as well. A point to be borne in mind is that, when being promised key personnel, every endeavor should be made to get names actually selected as well as a mere promise of the requisite numbers. This is really essential for prior training and for eventual smooth mobilization. In the same way, the director should try his hardest to ensure that important items of equipment are actually allocated and labeled in storage with their function

and destination recorded for each defense plan.

Meanwhile, the assistant director will be choosing the location of his various control and recovery posts and staging camps, and calculating the number of police and other personnel whom he will require for each plan. Similarly, the DAD will be working on the lay-out and equipment of his camps, and deciding on the numbers of personnel and amounts of supplies and equipment that will be necessary. He will also have to draw up his supply plans. Both the AD and DAD must bear in mind the necessity for arranging for the accomodation, feeding, and administration of their own employed personnel as well as that of refugees.

When the plans are finally drafted, the time will have arrived for fitting, as far as possible, actual persons, units, items of equipment and supplies from various storage places to specific tasks and locations under each plan. If possible, personnel should be available for training in advance, and dumps and storage places established in places convenient for use under all plans.

The final aim must be that everything is so laid on and organized that on receipt of the order "Put Plan X into operation," every letter, telegram or telephone message is ready to go out, and every man knows exactly what he has to do.

Once planning has reached this stage for all likely lines of enemy attack, thought can be given to the organization of base camps and dispersal areas, and to the question of welfare, education, rehabilitation, and utilization of labor; but for these problems time should be available even after the initial assault.

One warning, however, must never be forgotten. In the event of an enemy breakthrough, even if only a temporary one, the enemy may well be pounding down the road on the heels of the refugees. Therefore all plans must be flexible, and all camps and installations as mobile as possible.

Trends in Winter Warfare

Translated and digested by the MILITARY REVIEW from an article by Captain S. Ahnfelt in "Ny Militär Tidskrift" (Sweden) No. 3, 1953.

While the defender, in times past, was apprised by enemy fire that an attack was about to occur, he will, in the future come to perceive nothing, but will remain in the dark until the moment when the tanks erupt into his position. Surprise, which has been of little significance as long as mobility did not keep pace with fire power, now is resuming its old and dominant place in the art of war.—**Charles de Gaulle in "Vers l'armée de mètier," 1934.**

IT MAY be considered as universally known, that the great Finnish marches in the battles between Lake Ladoga and the Arctic Ocean in the winter of 1939-40, were due, among other things, to the mobility and cross-country capabilities in deep snow and extremely low temperatures of the Finnish units. The Soviet superiority in point of numbers and fire power, never found its full expression. The lack of ski troops and of vehicles capable of traveling in deep snow, and lack of snow plows, compelled the Soviets to operate close to the existing road network.

Finnish Shortages

The winter war revealed a few differences from the general picture which are noteworthy. The Finnish units suffered from lack of skis and sleighs. When General Hägglund with the IV Army Corps began his encirclement operations just north of Lake Ladoga in December 1939, there was lacking in some of the Corps'

units, as much as 50 percent of the skis and sleighs that they should have had, according to the armament plans in force. The shortages were not, however, so serious that the mobility and cross-country capabilities of the Finnish units were greatly compromised.

Soviet Ski Troops

On the Soviet side, skis were standard equipment, but the imperfect skill of the Soviets in their use, often led to the skis being carried on the vehicles of the train. In several cases, the Soviets employed ski units of up to battalion strength and these, as a rule, were composed of Siberian troops. These ski formations never succeeded in achieving any great successes. In at least one case, a ski brigade was employed by the Soviets. In co-operation with the 54th Division, attacking overland from Repola against Kuhmo, Dolin's ski brigade marched north of the highway, (part of the distance over the frozen lakes) apparently with the mission of cutting the Finnish communications lines. The brigade was supported by aviation—in the main, reconnaissance planes. After a 25- or 30-mile march from the frontier, the brigade was surrounded by the Finns and destroyed. The brigade, however, was exhausted from its march and it may have been partly disorganized after its commander was killed. The brigade was not up to the Finnish level in point of skill with skis but in spite of this, the Finns were forced to use strong units against the brigade for such a long time that they were not able to contain the 54th Division.

When one takes into consideration the fact that the successes of the Finns during that winter war, were due, among other things, to their superior mobility, it is important to remember that this mobility was represented by the rate of march of skiers and horses—that is, from 1.2 to 2.5 miles an hour under favorable conditions in the case of marches with large units. This is, therefore, quite a different order of mobility from that which characterized the operations of World War II, where the motor, most often, determined the rate of march in the decisive sectors.

After the conclusion of the war, the Arctic region, Alaska, and northern Europe become strategically important. Therefore, training, equipment, and tactics of winter warfare attracted special attention in the United States, Canada, and the Soviet Union.

The training for winter warfare embraces many important branches: skiing and snowshoeing, the organization of security and camps, the care of weapons and motor vehicles at low temperatures, marches, and combat. In the present article, only one phase of this training will be dealt with, namely, the furthering of skiing proficiency.

In the United States and Canada, skiing is not a national sport. To be sure, ski gliding is very popular, and is carried on in many winter sport locales in the Rocky Mountains and the Appalachians. Horizontal skiing is seldom engaged in and by "skiing," the Americans mean downhill ski running in a zig-zag or straight course—the skiers being transported to the starting place by means of a lift or cableway. From the military standpoint, there is no good civilian basis to build upon when it comes to the creation of units suitable for winter warfare in the regions involved here. For a Swedish observer, it is, indeed, easy to disregard proficiency in snowshoeing, for snowshoes are, as a rule, inferior to skis except for traveling in deep and loose snow. Among trappers in Canada and Alaska, snowshoes are used regularly, but this involves so small a population group, that it means but little from the general point of view. However, great effort is being made to give the American and Canadian Armies the skiing proficiency demanded by the

Arctic training will ensure the United States Army's proficiency in the event of winter warfare. Extreme arctic weather shows no favorites as matériel and personnel feel its impact. Above, troops advancing on skis during winter training in Alaska. Below, tanks supporting advancing infantry during maneuvers.—Department of Defense photos.

strategic situation. Comprehensive winter training takes place at a number of training centers in Alaska and the Rocky Mountains—Big Delta, Fort Lewis, and others. Expert instructors have been employed for some years now and there is reason to believe that good results have already been obtained—at least in the case of a limited number of organizations.

Soviet Skiing

An idea of the development of skiing in the Soviet Union is more difficult to obtain, because of the little information which is available. First, however, it must be realized that the climate in the Soviet Union favors winter warfare. The winter temperatures over large parts of the eastern section of the Soviet Union are approximately the same as in northern Sweden, and the snowfall is plentiful. In addition to this, Siberia offers possibilities that fulfill the extreme requirements. While one should not draw conclusions regarding the results obtained in ski contests in which only a small group of experts participate, it is significant that Soviet skiers of recent years have finished high in the contests at Holmenkollen, even though their strength and condition were more impressive than the excellence of their technique. Long distance competitions of 65 miles or over occur now in the Soviet Union, and judging by what can be learned, their leaders are striving to make skiing a national sport. It is not likely that the Soviet Army is excluded from this development, and the bitter lesson from the winter war has certainly not been forgotten. On the other hand one cannot, in a dictator state, create a large number of good ski organizations in a short time when skiing proficiency is not possessed universally by the civil population.

Formerly, the marching speed of skiers represented the highest degree of mobility off the roads in winter warfare. In recent years, an effort has been made both in America and in the Soviet Union to impart to winter operations a still more mobile character. This is accomplished by the use of airborne forces and by providing ground units with motor vehicles capable of moving over snow without the use of snow plows.

Especially in the United States, airborne forces appear to be counted on as an important factor for achieving surprise in winter through their extreme mobility. In the winter field service exercises which were conducted in the northern part of the United States, and in Canada and Alaska, after the conclusion of the war, airborne forces were employed with extensive missions. In view of the great distances involved both to and within Alaska, as well as the limited possibilities for stationing major troop formations there for any length of time, it is to be expected that the Americans will make use of airborne forces stationed in Canada or the northwestern part of the United States. These units would be alerted and prepared to move immediately into battle. On landing, these forces would be completely equipped for winter operations of long duration. It should be observed, that vehicles as heavy as *Weasels* (a caterpillar-tread vehicle) can be dropped by parachute. As a result, airborne forces, after landing, possess considerable mobility. Their combat potential can be maintained by means of supply from the air.

Soviet Training

The employment of airborne forces in the Soviet Army is partly a matter of speculation for Western observers. The Soviet Union was, as a matter of fact, the country first to make use of airborne forces on a large scale (peacetime maneuvers in the 1930s), and it is believed that this weapon is included in the Soviet arsenal, and that it is also the object of further development in connection with winter operations.

Winter favors the employment of airborne forces because of the increased landing possibilities it offers (frozen lakes and marshes). However, at the same time, winter weather imposes restrictions. Visibility is often reduced and in the case of snowfall, orientation is more difficult. In addition, airborne forces are particularly costly. Therefore, it is reasonable, even in the case of a major power, to assume that ground forces primarily will be used in winter operations, and efforts are being made to increase the mobility of such forces.

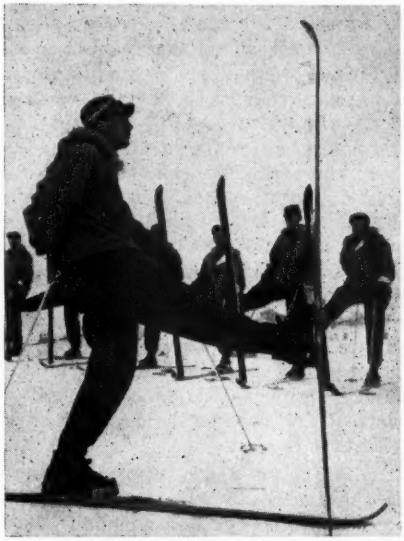
Caterpillar-tread Vehicles

Developments within the field of caterpillar-tread and similar vehicles are of great interest. In the American and Canadian Armies, caterpillar-tread vehicles are employed to a very extensive degree. In lower units, jeeps and trucks are replaced respectively, by *Weasels* and heavy caterpillar-tread vehicles (among others, the *Mark II Penguin*), when operations in deep snow are anticipated. These vehicles possess, together with towed sleighs, a transport capacity of 8/10-ton and 4 to 5 tons, respectively. Their speed is contingent upon terrain conditions. On lakes, highways, or fairly good roads, speeds of nearly 20 miles an hour or more may be attained. Over more difficult terrain, where careful reconnaissance cannot be effected, speeds drop far lower.

The caterpillar-tread vehicles serve two purposes: the towing of troops and the transportation of supplies. With the *Weasel*, about 10 men can be towed at a speed of 15 or 16 miles an hour under favorable conditions. Caterpillar-tread vehicles make quick surprise advances possible by ski forces.

Caterpillar-tread vehicles make necessary a revision of heretofore accepted concepts concerning the supplying of combat units during winter. During the winter war, the Finnish units were unable to carry on major combat operations at a distance greater than 3 miles from the road network. In this case, it was the capacity of the sleighs and the marching speed of the horses that set the pace. However, if in place of the horse, caterpillar-tread vehicles had been used, this distance could have been increased considerably, as is evidenced by the following study.

A battalion of average armament and strength uses in combat of a major type



A ski instructor showing a kick turn to United States troops training in Austria.

approximately 30 tons per day—including ammunition, food, and motor fuel. If such a unit were engaged in major combat 9.3 miles from the highway, and supply were handled by means of caterpillar-tread vehicles, 30 tons would have to be transported daily. The round trip would be 18.6 miles. Caterpillar-tread vehicles are capable of traveling 37.2 miles per day, and, therefore, can make two trips daily. For the supply of a battalion, under these conditions, 19 *Weasels* or 4 *Mark II* type

caterpillar-tread vehicles would be required. Evacuation of the wounded can be taken care of by making use of the empty caterpillar-tread vehicles which would be returning. If more caterpillar-tread vehicles were provided than were considered here, the distance between the end of the roadway and the fighting front could be extended.

Limitations

Caterpillar-tread vehicles have their limitations. They are more costly to operate than normal vehicles of equal capacity. Certain types are not suitable for use in slush because the water-filled snow freezes in the treads and because their treads are easily forced off in boulder-strewn terrain. This creates a need for careful reconnaissance, a need which is shared, it is true, by all type vehicles which have to travel either over poor roads or cross country. In the American Army it is taught that transportation by means of trucks must be employed as long as possible. Caterpillar-tread vehicles are not employed until routes suitable for the ordinary motor vehicle come to an end or cannot be repaired as the development of operations requires.

In the Soviet Army, motor sleds were used during World War II for the transportation of troops and supplies. These vehicles were, under favorable conditions, faster than caterpillar-tread vehicles. However, in deep snow, or in difficult terrain, they cannot be used. They are best used on frozen lakes or marshes, with little depth of snow. Here, great speeds can be attained.

It is not known to how great an extent the Soviet Army makes use of caterpillar-tread vehicles at the present time. It should be observed, however, that in America and Canada, developments in the field of caterpillar-tread vehicles take place in close co-operation between the representatives of the Department of the Army and those of the Forestry Service. Caterpillar-tread vehicles are very useful for transportation in connection with the cutting of timber in wintertime. In view of the great timbered areas of the Soviet Union and the great attention given to forestry, it is not unreasonable to assume that development is being carried out on a par with that of America and Canada.

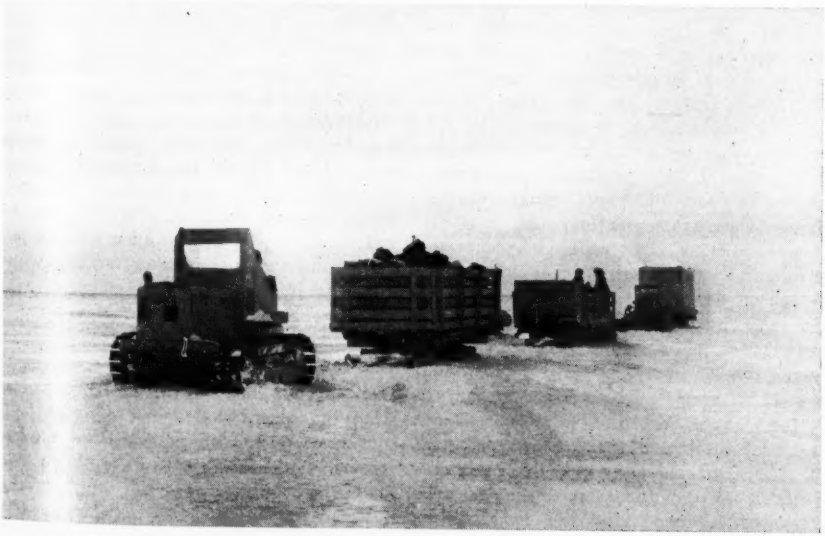
Roadway Networks

Even though caterpillar-tread vehicles and similar snow vehicles come to play an important role in future winter operations —lending them increased mobility—the transportation of the heaviest weapons and supplies will still be bound to road networks to a certain extent. While modern snow plow equipment makes it possible for motor vehicle routes to be opened over lake and marsh areas, in the American and Canadian winter maneuvers in recent years, special emphasis has been attached to the fairly rapid construction of a motor vehicle road network in addition to the one existing in the summertime. Proper technical equipment (tractor-plows and bulldozers) has made this possible. Dependence on roads, thus, does not possess the same characteristics that it did for the Soviet organization during the winter war. These, often enough, were obliged to operate with their hands tied, as it were, over the existing highway network. The cause of this was the lack of snow plow equipment. New roads could be built only very slowly, for foot forces were employed to tramp down the roadways and to shovel the snow. This dismal picture will not likely recur in a future winter war.

Summary

Summarizing the trends dealt with here, it may be anticipated that the army of a major power when involved in winter operations will possess the following characteristics:

After World War II, the arctic regions became strategically important, therefore, training, equipment, and tactics of winter warfare attracted special attention. Above, American soldiers fastening tow ropes to pull three *Weasels* up a steep slope. Below, a caterpillar supply train moving across icy, arctic wastes.—Department of Defense photos.



1. The main part of the units engaged will operate in connection with the existing road network, and will be dependent upon it for their supply. Their equipment with plows and skis, however, will permit operations to the side of the road network.

2. For rapid attacks across country, special units may be used which are skilled in the use of skis and are provided with caterpillar-tread vehicles (or corresponding vehicles capable of operating in snow) for the transportation or towing of the ski forces and the transportation of supplies. In the case of operations of long duration, these units may be entirely or partially supplied from the air.

3. In vital sectors, an airborne unit may be landed behind the enemy lines. It will be equipped with skis, sleighs, and snow vehicles, and will possess mobility after landing. Combat potential may be maintained for a long period through air resupply.

4. Winter operations of the future will be far more mobile than they were during the winter war. The ski formations which are towed or transported by motor vehicles will be able to conduct rapid, surprise attacks over large lake systems and marsh areas or even over ocean bays which are frozen. The character of the fighting will cease to be governed by the terrain. The activities of mobile forces will impart to the operations some resemblance to those of desert warfare—even though they are under inverted temperature conditions. By means of surprise, enveloping sweeps, an effort will be made to cut off enemy forces which are bound frontally by the heavier formations of greater fire power, which are more bound to the roads.

5. If an enemy, equipped and operating in the manner described, is to be stopped and beaten, certain prerequisites relative to equipment, organization, and tactical methods must either exist or be created. The speedy enemy units will clearly constitute a threat to one's operational freedom. These must either be beaten or otherwise neutralized during an early phase. If the defender is able to seize the initiative, he must have sufficiently powerful units at his disposal of at least the same mobility as those of the enemy.

6. It will be necessary that the participating personnel be accustomed to low temperatures and skillful in the use of skis. Further, it will be necessary that they have at their disposal either organically, or by means of temporary attachment, means for rapid towing and the transportation of supplies. In reference to this, no doctrinally fixed method must be prescribed. Under certain conditions, towing behind trucks will give greatest mobility while under other conditions, caterpillar-tread vehicles will be the best means. Under certain terrain and snow conditions, towing by means of horses is to be preferred. Obviously, these formations must have so closely knit an organization that the fighting may be conducted over areas of great width and depth. Guerrilla-like action will hardly be effective against as mobile an enemy as we are describing.

7. The tactics employed against the mobile units of the attacker, must aim at striking him at his weak points and during his weak moments. Delaying action and defense should be organized, in case of enemy pressure, in connection with open water courses or in forests, in order to reduce the speed of the enemy's vehicles. Mines and abatis also constitute important elements in defense. Even mines of reasonably simple construction are able to damage or interfere with the operation of snow vehicles.

An attack should be begun, if possible, with the enemy exhausted after a long march and when his supply lines are extended. The units selected for the attack should be grouped, in an early phase, over a broad front so that the enemy may be

intercepted and surrounded no matter which sector he decides to advance in. The enemy supply locales should be destroyed in surprise maneuvers which will be carried out as quickly as the possibility for it exists. Supply routes should be mined and the enemy's supply transports attacked.

8. Periods of bad weather, when the enemy is not able to make use of planes for fire support and supply, should be used for attacks.

9. The partially altered characteristics of winter warfare are not entirely disadvantageous to the smaller force. Suitable organization and equipment and the skillful use of the terrain gives the unit commander who possesses initiative and an aggressive attitude strong possibilities for making an unexpected and decisive attack.

10. The care and supply of motors require a large number of personnel and servicing installations. However, at the same time, it must be borne in mind that the enemy in a future winter war will be better equipped and trained for combat in snow and cold than the Germans who froze at Moscow in 1941; the Soviets who were victims of Hägglund, Talvela, and Siilasvuo's skillful tactics; or the American soldiers who suffered from trench foot during operations on the western front during the winter of 1944-45.

The Strategic Use of Air Power

Translated and digested by the MILITARY REVIEW from an article by Lieutenant Colonel F. Kalinowski in "Bellona" (Polish language Quarterly of Military History published by the General Sikorski Historical Institute, London) No. 2, 1953.

THE nations joined together by the Atlantic Pact have been assigned missions, within the framework of the North Atlantic Treaty Organization (NATO), corresponding with their situation and their strength. At the same time, the United States has seen itself obliged, for the sake of the general and its own particular welfare, to assure the European nations of economic and military aid. The fact that general control is in the hands of the Americans, with partial participation by the British and the French, may be the main, if not the sole cause of the nonquestioning—at least openly—by any nation, of the doctrine of war adopted or of the general strategic plan.

The share of the individual states in the formation of the ensemble of the forces of the Western powers, has been fixed in the following manner: the greater part of the ground forces are to be furnished by the European states, with France at the head; the main body of the naval forces is composed of the British and American fleets; each state has to provide its own tactical and defense aviation. On the other hand, the United States has taken upon itself the task of the constitution of the strategic air force with help from the British. Because of the unrestored condition or complete nonexistence of war industries in the European states, as well as consideration for the standardization of equipment that is desirable, the United States has undertaken, likewise, the supply of the greater part of the war matériel, except that Great Britain will furnish air matériel.

Balance of Forces

As is apparent, from numerous official statements, the American Joint Forces Staff acknowledges the leading role played

by strategic air forces in the sense that they will have to fulfill the first and most important mission at the beginning of the war, but, at the same time, it considers the mission of the ground and naval forces equally important. Therefore, it interprets the concept of "balance of forces" as *balance of missions, and magnitudes, of the different parts of the armed forces!* In fact, therefore, the leading role of the air forces is *theoretical*, a thing that has also been clearly evidenced in the armament proposed. The financial and organizational effort has been broken down, to an almost equal extent, into three parts. As a result, strategic aviation is to have around seven hundred heavy bombers; of this number, however, only one-fifth are planes of a radius of operation of around four thousand miles, the remainder, are planes of a radius of operation of up to two thousand miles, similar to planes of the 1944-45 type. The unusually small number of heavy bombers—700 in comparison to 6,000 in 1945—is interpreted by the fact that a bomber carrying an atom bomb, represents the striking power of 220 ordinary planes carrying 10 tons of ordinary bombs.

Fought in conformity with the doctrine of balanced armed forces, a war between the West and the East would assume the appearance of a continuation of World War II—with this difference: the principal adversaries, obviously, would be the Soviet Union and the United States. Since the first objective of the Soviets will be, doubtless, the conquest of the whole of Europe, therefore, the ground forces of NATO, numbering about 50 divisions with co-operating tactical aviation, will have to face the Soviet steam roller at the Elbe or the Rhine. At the same time, strategic aviation stationed at bases around the continent of Eurasia—and only in small part directly from America—will bomb the Soviet Union. The naval forces of the West, besides the normal missions of the supply of the air bases and the nations of NATO, will likewise carry on naval-air operations against the Soviets after the pattern of the operations of the American *Task Force 58* against Japan in February 1945. When the strategic bombings attain their purpose which, according to calculations, can occur only after a long period of time, some ground forces will be brought, by sea, to a chosen sector of the Eurasian Continent or, perhaps, to the Soviet Union itself, and with the collaboration of airborne forces, there will begin the military operations on the soil of the Soviet Empire itself.

Air Warfare

It is clear, therefore, that the West is preparing itself for air warfare of the same type and by the same methods and means as in the years of 1944-45. With this in view, the American Navy is acquiring gigantic carriers and an air force numbering around eight thousand planes.

The advocates of the doctrine of air warfare assert that because of the great preponderance of the manpower of the East over the West, the great expanse of Eurasia, not only of the Soviet Union itself, and the great distances separating America from the possible frontiers, the defeat of the Soviets and their satellites by way of the surface route, is quite impossible and that one method of escape from this impasse is air warfare on a large scale. In the field of strategic aviation, the United States possesses, at the present, and will continue to possess for a number of years, a considerable superiority over the Soviets, and only bombing attacks directed at the heart and brain of the principal Communist state, resulting in the destruction of its war potential and its nucleus of political administration, can crush the Soviet edifice and at last ensure the world of permanent peace.

These considerations logically indicate, therefore, the development, by the West,

in the first place, of strategic aviation of great range of action, capable, that is, of taking off from bases on the North American Continent—for all the bases around Eurasia would be under the heavy attack of Soviet aviation and their maintenance, protection, and supply, would cost heavily —and probably to no avail. According to this doctrine, the ground forces and the naval forces have an auxiliary role to play, and afterwards, in the final phase, they have a police role to fulfill, as it were, in the restoring of order in Eurasia.

Soviet Action

It seems certain that the Soviet forces supported by powerful aviation, will find themselves, after a few weeks time, at the Pyrenees, and the resistance of Spain, for any period of time, seems doubtful. Sea bases of the American aviation cannot be held when they are within the range of the heavy Soviet aviation, and their supply is faced with a great threat in the form of the Soviet submarines. In dispersing its efforts as well as its human and material resources into three parts, the West is playing into the Soviets' hands, since it is for surface warfare that the Soviets are preparing themselves. As a result, the West will be weak on the ground, on the sea, and in the air. The Soviet Empire occupies a gigantic and self-sufficient continent, for the defense of which, the Soviets are able to assemble with adequate speed, great forces in every sector of anticipated attack. Their enormous ground forces, stemming from inexhaustible sources of manpower as well as their powerful and modern co-operating air force, ensure the Soviets superiority in all places. Their submarine fleet can be used to combat the shipping of the West, but they themselves, have absolutely no need of shipments by sea and, therefore, no reason for building a surface fleet.

The concept of air-naval operations against the Soviet, that is, of the use of carriers under the protection of a powerful fleet, is wholly erroneous. The experiences of World War II showed, without any doubt, that operations of this kind are possible only under the condition of air supremacy; secondly, they are clearly out of proportion in point of cost and economy, with the results obtained. Operation *Task Force 58* cost 35 times more than the use of land bombers would have cost. One forgets, that this naval expedition set out only after Japan had lost all her aviation and submarines. But every expedition of this type against the Soviets will be under constant air and submarine attacks. The greater part of the aviation of the expedition will have to be used for defense.

When the remnants of the expedition eventually reach the necessary proximity to the land—around five hundred miles—the load of bombs will certainly not be very large, if the naval planes do fly, at all, to the targets, for the enemy will have several days' time in which to arrange suitably for their reception.

Strategic Aviation

In the one, as in the other doctrine of war, the number of bombing planes of strategic aviation must be considerable. The figure of 700, seems to be evidence of great and wholly unfounded optimism. The character of air warfare has not undergone such great changes that we are free to regard lightly, the lessons of World War II. Strategic aviation must comprise thousands and not hundreds of planes. All of them must be of the global type, or at least possess as great a radius of action as the *B-36s* and the *B-60s*. In addition, they must be able to operate from bases in America against every target in Eurasia. In the production of strategic airplanes, there will undoubtedly be repeated the error of 1939-43.

Dispersion of Strength

The doctrine of balanced forces is not anything new. It seems to me, that this is only the transfer, to a higher level, of the old and worn principle that is everywhere instilled in the soldier and according to which, all arms are equally important and necessary for victory. But although no one contends the correctness of this principle in the training of the soldier and in its application to the field of battle, nevertheless, in the field of operations and particularly of strategy, the observance of this principle indicates that something is wrong, that there exists a lack of decision and a denial of the lessons of history.

"Wishing to be strong everywhere, as a consequence, we shall be weak everywhere." This inevitable result of regarding lightly the principle of the concentration of forces at the right time and place, is universally understood in the field of tactics; in strategy, however, the result is often unperceived, being discernible with more difficulty in the field of deliberation and decision; with less difficulty in instances of failure to bear in mind the unchanging principles of the art of war. The West, in its endeavor to be strong on the ground, on the sea, and in the air, seems to forget that this leads, inevitably, to a dispersion of strength. In the development of civilization, man first, and for centuries, traveled over the ground, envious of the fish swimming in the water and of the birds flying in the air. From swimming like a fish, man quickly went over to sailing over the water, making use of different forms of transportation means—from rafts and primitive boats to ships ingeniously built with simple tools. For thousands of years, fighting and battles between nations and tribes of men were decided on land. Afterward, sea fighting played an ever greater role in the history of war until, in the last centuries, thanks to sea power, the greatest empires of the world arose.

However, during the years from 1918 to 1939, it was clear to many that the nightfall of naval power was close at hand, since man had mastered, completely, the art of flying. As a result of this, the air surrounding our globe has become, automatically, the principle decisive element of battles on land and on sea, as well as of war. The historians of World War II and all the leaders of the highest echelons, with one accord, have asserted, basically, the importance of superiority in the air in military operations on the land and on the sea. It is an incontestible fact, that the attacks of strategic aviation crushed Japan in spite of her untouched army of six million men. And yet today, the West is planning to defeat Soviet forces occupying an area 57 times greater than Japan, by the use of its own ground forces which are several times weaker, numerically, than the Soviets'. It is also planning operations by naval aviation from great naval armadas against an enemy who possesses ground-based air forces and a powerful submarine fleet.

Western Superiority

The air is the decisive element on which victory depends, and in a war between the two continents, the side with the considerably weaker human potential will be able to obtain victory only by means of air power, since only air power possesses the power to inflict direct blows on the economic life and the political administration of the enemy. The West possesses a decided technical superiority over the East, especially in the field of air forces. There is needed only clear thinking and a certain amount of imagination in order to take advantage of this superiority. It is necessary, however, to know to free oneself from the shackles of orthodox military thought, and concepts of surface warfare and combined operations.

Because of the difficulty of holding overseas air bases, the United States must possess a majority of strategic bombing planes of global range of action—based on the North American Continent. However, the complete renouncement of bases situated closer to Eurasia, does not seem to be indicated, and in some cases is even impossible. The most convenient and, at the same time, nearly self-sufficient air bases, are the British Isles. The maintenance of these in a full state of usefulness is necessary to the defense of Western Europe. Equally necessary, is American aid for Europe, for in the contrary case, the seizure of the whole of Europe would not represent any risk for the Soviets and the advantages of a conquered Europe, would be enormous for the East. A few months of stubborn warfare could considerably weaken the Soviet military forces and give rise to domestic difficulties inside the Soviet Empire and, simultaneously, could suffice for the production of sufficiently great destruction of the economic and political life under the influence of concentric attacks of strategic aviation.

Air Defense

In a state of an excessively centralized structure, great concentration of industries, and an unusually weak transportation and signal communication network, atom bombings would certainly produce far greater chaos and confusion than occurred in little Japan or than would occur in a country of high civilization such as Germany, especially since the air protection of so gigantic an area is considerably more difficult and without any doubt, still incomparably weaker than it was in Germany. At the present time, we are living in a period in which, in the field of air warfare, attack has the lead over defense. With planes flying at heights over 32,000 feet, the antiaircraft artillery is entirely useless and for the effective action of fighter aviation, a tight radar and radio network is indispensable. The Soviets cannot yet possess an adequate system of air surveillance and fighter control. Moreover, we know from experience, that even the best defense is able to stop only a small percentage of the attacking planes. Missiles guided from the ground are the air defense of the future, but for the production of a suitable number of units of "guided missile artillery" and the large number of projectiles needed by the Soviets, many years will be required.

Conclusions

Looking into the distant future, it would be possible to venture the assertion that the putting off of the encounter between the West and the East is more dangerous than war in the immediate future. The prolongation of the "cold war" together with avoidance by Soviets, of the production of new irritations and local conflicts of the Korean type, cannot avoid widening the abyss already existing between the West and the East, and may bring economic and social hardships on the West, especially in the United States, which is the objective and dream of the Soviets.

In the present armament race, time is certainly on the side of the Soviets: in ground forces, the West can never equal them; in war on the seas, a submarine fleet is all the Soviets need, and this they are constructing at a considerably lower cost than the West; and in the air, they are placing emphasis on aviation cooperating with ground forces, and on air defense. It seems, therefore, that the Soviet Armed Forces is growing more rapidly than those of the West. Only in the field of strategic aviation are they behind for the time being but it is hard to judge how long this will be the case. If, however, the United States were to concentrate its efforts mainly on strategic aviation, this might increase its predominance

to the point where the Soviets could never equal it. As a result of errors committed by the West at the end of World War II, an eventual third world war will begin entirely on non-Soviet soil, and only powerful strategic aviation will be able to carry the war deep into the Soviet Union. If they do not, the whole of Europe will become a great Korea, with the rulers of the Kremlin sitting safely "behind the Yalu River" consigning ever new divisions to the field of battle.

India's Influence in Southeast Asia

Digested by the MILITARY REVIEW from an article by Lieutenant R. W. R. Ardley in the "Australian Army Journal" May 1953.

INDIA has been a great center of civilization in Asia since the earliest times. The recent excavations in the Indus valley have shown a flourishing civilization as far back as 4000 B. C. At times in her long history, India has been the center of a Southeast Asian empire; as witness the ruins at Cambodia, Java, and elsewhere. However, more important than empire has been India's influence in the arts and religion. The philosophy of Buddha spread from India southward to Ceylon, Burma, and Siam, and northward to Central Asia, Tibet, China, and Japan. While Buddhism still flourishes in these countries, it has almost died out in India itself, having been absorbed back into the original Hinduism.

In the fifteenth century, Europeans began to arrive in India. In time, British interests became paramount. The justice of alien rule in India has long been a subject of controversy—often embittered—between Indians and their European rulers. It is sufficient to say that the more liberal of the great English proconsuls in India envisaged the British rule as a benevolent tutelage in preparation for India's eventual self-government.

In the twentieth century it became evident that the time for Indian autonomy was ripe. However, the problem of transferring power was not an easy one. It was rendered even more difficult by the misguided zeal of some of India's own political leaders in their attempts to hasten the process.

In 1947, England succeeded in disengaging herself from India by the expedient of partitioning the country into two realms; that of India proper of predominantly Hindu composition, and Pakistan which was predominantly Moslem. Since partition, India and Pakistan have gone their separate ways. Their amity, never great at the best, being marred by the dispute over the territory of Kashmir.

Gandhi's Influence

The moving spirit in the creation of the new India was Gandhi: "He came like a powerful current of fresh air, like a beam of light that pierced the darkness . . . like a whirlwind," wrote Nehru. Gandhi spoke for the millions of inarticulate India. He was revered as a saint. He entered Congress and gave new life to that organization which was eventually to be entrusted with power in India. Gandhi was the apostle of non-violence, the defender of the worth and dignity of the common man, the proponent of the spinning wheel and village craftsman doctrine of work, and the enemy of centralized industry and exaggerated urbanization.

In the end, Gandhi's humanity cost him

his life. During the wave of disorder and massacre of communal minorities which followed the partition of India, Gandhi devoted himself to the protection of the minority communities. Hindu zealots assassinated him.

The evolution of India in the last few years has been away from the Gandhian ideals. Under force of circumstances, factories and centralization along Western lines are replacing the village crafts. India is moving more and more toward the pattern of a modern European state.

India's Philosopher-Ruler

The architect of the new order in India is the present Prime Minister, Pandit Jawaharlal Nehru. He was born in 1889 of a high Brahmin family, and was educated at Harrow and Cambridge. He practiced at the Bar, but in 1920 turned from law to politics. He joined forces with Gandhi, and quickly rose to a commanding position in the All India Congress Committee. In the troubles with the British authorities, he was imprisoned on several occasions. On the attainment of Indian independence in 1947, Pandit Nehru became India's first Prime Minister.

Once the struggle for independence was over, Pandit Nehru showed himself a wise, judicious, and truly liberal ruler of his country. He has kept India in the British Commonwealth of Nations, and has labored mightily to rebuild India along the lines of what he believes to be the best of East and West.

Center of Neutrality

The foundation of Indian foreign policy, as conceived by Pandit Nehru, is the resurrection of Asia. As Nehru sees it, Asia, until the fifteenth century, held an exalted place in the world. It then became submerged under the weight of European domination. The newly independent India, situated at the pivot of Asia, is now leading the revival of Asia. To this end, Nehru declares, India's policy is one of peace and friendship with all countries, and the avoidance of alignment with power blocs. Accordingly India stands aloof, as far as possible, from both the Soviet and the American spheres of influence.

As corollaries to this basic objective, India is working to end colonialism and imperialism wherever they may be found in Asia, and for the elimination of race prejudice and the color bar the world over.

Nehru wrote:

> It has been India's privilege in the past, to be a meeting place for many cultures. It may be her privilege in the present and the future to be a bridge to join warring factions and to help in maintaining that most urgent thing of today and the future—the peace of the world.

India is thus functioning as a bulwark of stability in east Asia. Her prestige is very high. India was the first Asian country to achieve independence and is the great exemplar for the rest of Asia.

Nehru is not dazzled by economics and the apparatus of the technical age. He sees more deeply into Asia than that. While Nehru is in control, we may look to India as a firm center of moderation and neutrality. However, after Nehru—what? In the present high state of tension in the world, the pursuit of India's policy of neutrality is like walking a tightrope. A man of less sure touch than Nehru might succumb to one force or another, or might even attempt to launch out into a Hindu imperialism as a third world force.

Sino-Indian Relations

Under the long British tutelage, India was effectively isolated politically from Asia; India's orientation was predominantly European. On the achievement of autonomy and the division of the peninsula, Pakistan naturally turned toward the Middle East and the lands of Islam. India, however, turned toward the Far East; an orientation which was greatly facilitated by the development of air traffic.

In the Far East, India saw China as her principal partner in the slow re-emergence of Asia. India's fellow-feeling with China was founded on a sense of common Asian nationalism, not on domestic politics. Nehru was friendly to the Government of Chiang Kai-shek; after the Communist revolution he was friendly to the Government of Mao Tse-tung. Accordingly, in world counsels Nehru has been prominent in advocating a general recognition of the new Chinese regime and its admittance to the United Nations.

On the other hand, the militant communism of the new China is embarrassing to India. Nehru has a serious problem on his hands in the growing communism in India itself. Where, as in India, education is often far ahead of the prevailing standards of living and opportunities for self-expression, a disgruntled class of new pseudo-intellectuals is clay in the hands of Communist propagandists. The rise of communism in India has been met by the Government with stern measures of repression and summary imprisonment. The internal Communist threat is pushing India more and more toward a dictatorial mode of government.

In such a situation it will not be easy for India to maintain a friendly liberalism toward a China which has now become the very fountainhead of Asian communism, which gives comfort to the Communist parties abroad, and promotes the southern drive of Communist insurrection in Asia.

Accordingly, in considering India's future in Asia we must appreciate the points of latent conflict with China.

The crucial situation of Burma in Southeast Asian strategy became manifest in the Japanese invasion of China. China's attention was turned from the "front door" through the Treaty Ports to the "back door" via the Burma Road. More recently, Chiang's abortive attempt to reconquer China by this same back door by infiltrating Kuomintang or Nationalist China troops into eastern Burma, and from this base invading Yunnan, although unsuccessful from lack of adequate support, has kept the attention of strategists directed to Burma.

The official Government of Burma is very feeble, and the country is largely given over to various Communist guerrilla bands. In this condition, Burma can offer little resistance to any determined military designs of the neighboring powers. The future of Burma is fraught with grave possibilities for the security of India. A Communist regime in Burma would be a menace to the whole Indian peninsula. Accordingly, both China and India must have a lively interest in Burma, but their requirements are diametrically opposite.

The Indian Ocean

For the last century and a half the British fleet has been the mistress of the Indian Ocean. Now the old unity has gone. India, at the focus of the Indian Ocean has achieved independence, albeit with British Commonwealth ties. Growing Asian nationalism seems likely, in time, to break up all the old unity of direction in Indian Ocean strategy.

India is the natural geographical center of Indian Ocean politics. Furthermore, India has interests all around the perimeter of the ocean which she must tend. As yet, India is ill prepared to assume these oceanic responsibilities. India's military efforts have for long been directed to the central Asian frontiers. However, India must in time take her proper share of the responsibility for the Indian Ocean as befits her new dignity as an independent member of the British Commonwealth.

The Achilles' heel of the Indian Ocean is its eastern island boundary. The rapid oceanic expansion of Japan in the recent war, almost to the confines of India, demonstrated how vulnerable the Indian Ocean

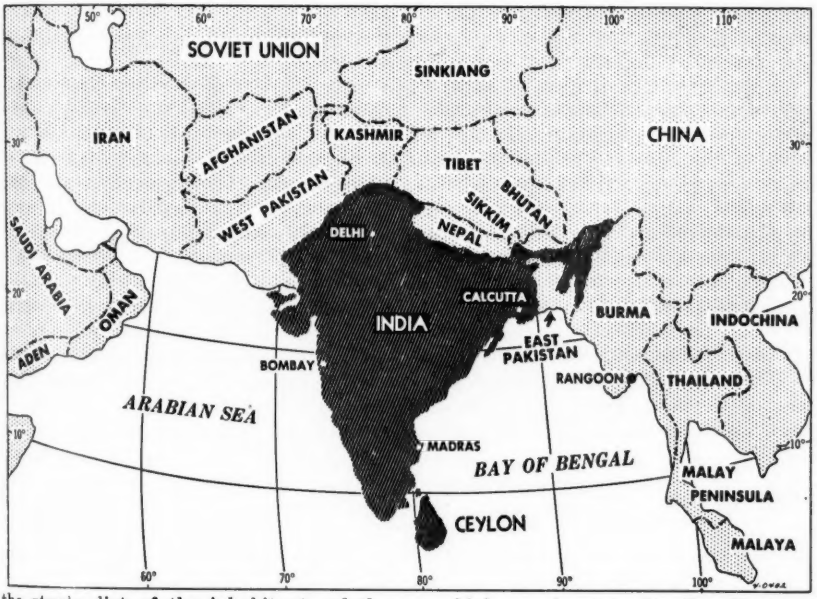
is to penetration from the Pacific. Now China has, potentially, taken the mantle of Japan. If the Communist southward expansion succeeds, then it may be difficult for India and China to avoid a growing tension over the mastery of the Indian Ocean.

The Rice Economy

An appreciation of Asian economics reveals the crucial role of rice. Rice is the staple diet of the inhabitants of the far eastern countries. Most of these peoples are incapable of sustaining life on any other food; they would starve to death if rice were not available. Consequently, any major dislocation of the rice economy of Southeast Asia would have immediate and disastrous effects. Only three Asian countries have any large surpluses of rice: Burma, Thailand, and Indochina. All other Asian countries have to import rice from these three countries to supplement their own supplies. India imports about half a million tons of rice each year. This vital food supply to India and other eastern countries would be in jeopardy if Indochina, Thailand, and Burma fell into Communist hands.

The present Communist attempts at insurrections in Burma and Indochina take on a more than local strategic significance when the movement of rice is considered. If the supply of rice from these countries was cut off, distress and famine would be produced in the Far East and under such conditions communism would be likely to spread rapidly. To meet such a contingency, either the Western powers would have to make good the deficiency—which would place a great strain on those powers—or alternatively, the rice-importing countries would be obliged to enter into trade agreements—with Communist China as the controlling power—and would thus be drawn more and more into the Communist sphere of influence in Asia.

It is evident, then, that by gaining control of rice, Communist China could vir-



tually hold much of Asia for ransom. This would place India in a particularly difficult position. Her avowed neutrality in international affairs would be undermined. India would be forced, by starvation, to capitulate to China's terms, to fight China, or to come as a mendicant to the Western powers. The only solution to the problem is for the Southeast Asian countries to grow more rice, to which end, earnest efforts are now being directed.

The Tibetan Situation

In 1951, the Chinese Communist Government re-asserted China's ancient suzerainty over Tibet. After careful preparation of the situation politically, using the rivalry of the Dalai and Tashi Lamas, a military force was sent to Lhasa to uphold the authority of the Peking Government. Tibet is now, to all intents and purposes, a province of China. So, the last mountain bastion of the ancient order in Asia has capitulated to the new fervid Asia of the mid-twentieth century. Tibet, for a century past, a closed land, is now more closed than ever to the Western world. However, it is wide open to the Communist policy.

Tibet occupies a position strategically critical for India. Situated behind the Himalayas, on the high roof of Asia, Tibet physically dominates the plains of India. In 1903, a British expeditionary force under the direction of Colonel Younghusband was dispatched by the Government of India to penetrate to Lhasa and assert British authority in the country, in an endeavor to safeguard India from the growing Russian influence from the north.

Now the process has been reversed, and Tibet's political orientation has been decisively swung away from India to Peking and Moscow. This must give considerable disquiet to the Government of India. It is not unlikely that any considerable military operations would be launched against India from Tibet; the mountain barrier and the very long lines of communication would be too great an obstacle. However, Tibet would serve as a very effective base for the Communist political and social indoctrination of India, particularly as Tibetans have always been in the habit of making pilgrimages to the Buddhist shrines in India.

With the alienation of Tibet, attention must be directed immediately to the situation of the Himalayan border states of Nepal, Sikkim, and Bhutan, which act as a screen between Tibet and India. It is obviously to India's interest to preserve these states as allies of India, and not allow them to be absorbed into the central Asian orbit. These states have long had Chinese as well as Indian affiliations, and their frontiers with Chinese territory are not clearly defined. Now that these lands have become part of the sensitive membrane dividing the two regions of Asia, the destiny of these obscure border countries may contain seeds of Sino-Indian conflict in spite of India's endeavors to maintain close and friendly relations with the new China.

When India was partitioned in 1947, the boundaries between India and Pakistan were drawn by mutual agreement and local preference. The choice in the case of Kashmir was rendered difficult because the Maharajah of Kashmir was a Hindu while the people of Kashmir were overwhelmingly Moslem.

Following a Moslem insurrection in his domain, the ruler of Kashmir summoned Indian help. Pakistan sent troops to safeguard the Moslem interests, and a struggle ensued. The United Nations Security Council arranged a cease fire to take effect from 1 January 1949, and directed that Kashmir should have the option of adhesion to one or the other side by plebiscite. So far it has not been possible to arrange that plebiscite, and the Kashmir situation remains a grave embarrassment to all concerned.

In the meanwhile, Communist propagandists are making the most of the unhappy state of Kashmir to further their policies. There appears to be a possibility of Kashmir becoming an independent Communist-sponsored state.

The dispute over Kashmir is a most unfortunate incident in the establishment of the new order in the Indian peninsula, and is a grave handicap to India in the pursuit of her foreign policy of neutral leadership in the resurgence of Asia.

India and Britain

When, in August 1947, Britain relinquished her power in India, it was a matter for conjecture whether the new India and Pakistan would remain within the British Commonwealth or sever the connection completely. It was widely believed that Pakistan would stay in the Commonwealth, but that India would withdraw. As is has turned out, both these countries, along with Ceylon, have remained in the Commonwealth. Why did this happen? It was certainly not dictated by merely economic motives. Burma, confronted with a similar choice and with much to gain economically by remaining in the Empire, elected to secede.

Fifty years ago, informed Indian opinion favored a dominion status for India on the lines of Home Rule. However, by 1930, Congress' feelings had hardened, and complete independence was the order of the day. Nevertheless, in 1947, when the struggle was over, and Britain had freely handed over India's independence, the old bitterness turned to growing esteem and friendship. Nehru steered India into the Commonwealth as a republic. At the Conference of Commonwealth Prime Ministers in London in April 1949, India, while yet a sovereign independent republic, was declared to be a member of the Commonwealth. By this association, India has not lost her freedom in domestic nor in foreign affairs. However, Nehru's experience has shown him that in international relations the free association of the Commonwealth is preferable to the more inelastic associations and commitments of treaty alliances.

India is thus the premiere Commonwealth representative in Asia. As such, she exerts a considerable sobering and stablizing effect on Southeast Asia. National aspirations in countries which see in India their forerunner and prototype are likely to be directed in the paths of reason and moderation by the judicious course which India is following.

Guided Missiles

Digested by the MILITARY REVIEW from an article by Rear Admiral G. P. Thomson in "The Navy" (Great Britain) November 1952.

WHEN the Germans launched the *V-1* flying bomb and the *V-2* rocket against London, they gave the world nothing new in the way of weapons, for both types of missile were, in principle, already well known to scientists and armament experts. However, the fact that, given a wide target area, large self-propelled missiles could achieve effective results at ranges of some 220 miles at once aroused interest in the rocket as a possible new form of long-range missile. Rockets with a solid propellant had, of course, been employed by all belligerents in World War II for short-range preassault and antiaircraft barrage purposes, and had later been developed for firing from aircraft. Having no recoil, they can be fired from a

simple light tube which serves merely to point them in the right direction. There is none of the shock to the aircraft's structure that would result from the firing of a gun of the same size and they can thus be much larger with considerably more explosive power than a shell. Rockets fired from aircraft may be armor piercing, semi-armor piercing, high explosive, flare, smoke, and shape-charged. Typical modern rockets for use from aircraft are the United States Navy's 2.75-inch rocket with folding wings, and the 6.5-inch shape-charged rocket which has been very effective against tanks and personnel in Korea.

Guiding the Missile

However, the German *V-2* long-range rocket might well have remained the inaccurate, freak missile which it then was had it not been for concurrent developments in other directions. Improvements in radar and electronic computers indicated that it should be possible to guide a missile throughout its trajectory, either by means of mechanism inside or by instruments located outside it, and considerable sums of money were expended both in Great Britain and the United States in furthering these investigations. Various types of guided missiles are being developed. These include the large surface-to-surface missile for launching from a platform on land or on board ship against surface targets; the surface-to-air missile for firing at aircraft; the air-to-surface missile or bomb for dropping from aircraft; and the "homing" torpedo for firing from or at a submarine. No doubt, an air-to-air missile will also be developed when the need for aircraft to fire against each other at longer ranges becomes urgent.

Surface-to-air Missile

In his memorandum accompanying this year's Navy Estimates, the First Lord of the Admiralty referred to the guided missile as "the most promising weapon in the antiaircraft armory for use at ranges between those at which our fighter aircraft and our antiaircraft guns can operate." Moreover, not long ago the Minister of Supply announced that we had made remarkable progress in the development of the guided rocket which, he said, would add appreciably to our security. Both these official statements suggest that in this country we have been concentrating on developing the second type—the surface-to-air missile (apart from the "homing" torpedo on which we have been assured that good progress has been made). Strict secrecy is, of course, maintained regarding the methods and instruments employed for guiding the missiles, but for internal guiding mechanism to be used successfully the target must clearly have some characteristic feature which distinguishes it from the background and is thus "recognizable" to the target-seeking instrument, whereas external guiding mechanism presupposes an accurate knowledge of the position of the target.

The First Lord in his memorandum no doubt chiefly had in mind defense against aircraft attack on ships at sea, for the guided missile is also likely to be indispensable for the destruction of very high altitude bombers. The high speed of modern interceptor fighters makes maneuvering a matter of some strain, but a guided missile can be turned sharply at speeds of more than 500 miles an hour. In this connection it is interesting to note that General J. Lawton Collins, former Chief of Staff of the United States Army, when referring to the surface-to-air guided missiles which are now in an advanced stage of development in the United States, expressed the view that they would bring down an aircraft at 60,000 feet. Antiaircraft guns are, of course, still also essential, for they are always likely to be more effective against low-flying targets.

Surface-to-surface Missile

From the United States comes a good deal of information about the surface-to-surface long-range missiles under development in that country, which are of two categories—the rocket and the winged missile. The rocket carries its own oxidizer, travels beyond the atmosphere, is supersonic, and has a parabolic trajectory. In appearance it may be compared with the German *V-2*. According to semiofficial sources, a 12,000-pound long-range guided rocket has already been successfully tested in the United States, and a smaller version of that missile may well be intended as the main armament of the two cruisers of the United States Navy which are being rearmed with rocket launching platforms. The second type—self-propelled guided, winged missiles—has been fired experimentally from both surface ships and submarines of the United States Navy with promising results. Some of these self-propelled missiles have also been recently used in the Korean campaign. They are fitted with a television installation by which the launching ship or controlling aircraft is able to guide them to the target. It may be noted that the practicability of using atomic explosive in the near future as the charge for conventional missiles—which has recently been authoritatively confirmed in the United States—will add enormously to the destructive power of the long-range rocket or winged missile.

Air-to-surface Missile

The air-to-surface missile is also being developed in two types—the controlled bomb and the glide bomb. The trajectory of the former can be varied to obtain increased accuracy either by a built-in target-seeking device, or by remote control from the launching aircraft. The glide bomb differs only in that it is fitted with wings to increase its range and thus to reduce the length of time the launching bomber is exposed to enemy fire. Both types should be very effective against ships and other clearly defined targets.

Propellants

One of the main problems requiring further investigation is to find the most suitable liquid fuel propellant required for guided missiles. The efficiency of the propellant is increased by high chamber pressure and it is thus desirable that the propellant combination should contain as much hydrogen and as little carbon as possible. Tests have been made with various compounds for fuels and with hydrogen peroxide, pure liquid oxygen, and other oxidizers, but each has its disadvantages, and a good deal of research will be required before an entirely satisfactory propellant combination is obtained.

Influence of Guided Missiles

The effect of guided missiles on naval operations and on the design of ships may well be profound. On the one hand, ship-launched surface-to-surface rockets —fitted in all likelihood with atomic warheads—will give warships, both surface and submarine, immensely increased offensive power. The battleship of tomorrow may in fact be a relatively small, fast vessel, more expendable than the conventional battleship as we know her today. On the other hand, the air-to-surface guided missile against surface ships makes their antiaircraft defense a problem of increasing difficulty when operating in enemy waters.

BOOKS OF INTEREST TO THE MILITARY READER

THE RAILROADS OF THE CONFEDERACY. By Robert C. Black III. 360 Pages. University of North Carolina Press, Chapel Hill. $6.00.

BY COL GEORGE C. REINHARDT, *CE*

Taking the military role of Southern railroads in the Civil War as his text, Robert Davis has produced a sermon on economic mobilization controls *versus* free economy; patriotism *versus* self-interest. Against the spectacle of the Confederate democracy in extremism, patriotism and free enterprise come off decidedly second best. In fair appraisal, however, there is a complete lack of evidence that bureaucrats of that tragic era could have shouldered better the terrific burden.

The book, as Dr. Black doubtless intended, *The Railroads of the Confederacy* ably fills a blank spot in United States history. The *Reminiscences of Herman Haupt*, and official records of his able successors as Chief of Union Army Railroads are available, if little employed, to inform on the manner in which Northern armies used the iron horse in the world's first railroad war. Far more obscure has been the role of rail and locomotive in the very areas where their potential was greatest, the interior lines of the Southern forces. Here, Dr. Black has ploughed virgin soil and produced a bountiful harvest from the "other side of the hill."

Military readers may bewail the scarcity of detail regarding Longstreet's rail movement from Virginia to Chickamauga in September 1863; the emphasis upon corporate jealousies and management (or mismanagement). Even more frustrating is the almost casual treatment accorded Lee's daring maneuver (June 1862) first reinforcing Jackson's valley contingent from the troops opposing the sluggish Mc Clellan and then returning Jackson's entire force to engage in the Seven Days Battle. Confederate railroads made these operations possible. Just how they accomplished as much as they did, and what potential they failed to exploit, remain an intriguing research which Dr. Black may someday undertake.

The author's qualifications for logistic scrutiny of the Civil War are readily apparent. For example: his treatment of Hood's plan (in reality the barest hope) to shatter Sherman emphasizes the one insuperable bar to those scintillating grand tactics—the lack of a railroad to carry and to support Hood's tired divisions on the vast envelopment into Tennessee. The volume's notes and bibliography have material to support those qualifications. I hope that *The Railroads of the Confederacy* is but the first of a series in logistic-economic-military history from the typewriter of Dr. Black.

THE UNITED STATES AND TURKEY AND IRAN. By Lewis V. Thomas and Richard N. Frye. 291 Pages. Harvard University Press, Cambridge, Mass. $4.25.

WILLIAM CONANT CHURCH AND THE *ARMY AND NAVY JOURNAL*. By Donald Nevius Bigelow. 266 Pages. Columbia University Press, New York. $3.75.

ATOMIC WEAPONS IN LAND COMBAT. By Colonel G. C. Reinhardt, *CE*, and Lieutenant Colonel W. R. Kintner, *Inf*. 182 Pages. Military Service Publishing Co., Harrisburg, Pa. $3.95.

BY LT COL COLEMAN W. THACHER, *Arty*

The authors, by reason of their work and study as faculty members at the Command and General Staff College, are well qualified to accomplish the mission they have assigned themselves: ". . . to explore, primarily at division level, the problems which atomic warfare poses to division, regimental, and battalion commanders; to amplify for the individual soldier the manner in which atomic weapons will affect his performance and his chances for survival in battle." In addition, the authors attempt a "forecast of what atomic warfare may mean to all combat ranks from general to private," concluding that the principles of war remain valid, although we can expect changes in the application of these principles to battle tactics as a "result of harnessing nuclear fission to the chariot of Mars."

The discussion, limited to the employment of a *20-KT* weapon, runs the gamut from weapons effects through various tactical implications on to training requirements and problems of command, to indicate, in broad outline, some of the questions confronting the commander and his staff in the tactical employment of atomic weapons in land combat.

The basic nature of the data presented reflects the limitations imposed by the rigid security restrictions existing in the field of atomic weapons; however, much of what should be familiar to all individuals interested in national security, is included.

Lieutenant General Manton S. Eddy recognizes, in the foreword, the necessity for such a "study of atomic weapons in land combat as a first step in widespread discussion of, and education in, a vital matter of American security."

THE TAMING OF THE NATIONS. By F. S. C. Northrop. 362 Pages. The Macmillan Company, New York. $5.00.

BY COL PAUL L. BATES, *Armor*

Philosopher and teacher, F. S. C. Northrop analyzes the conceptual, philosophical, and cultural base of the larger existing social groups in the East and West today. As a technique, he offers numerous quotes from various Indian periodicals to reveal the primary interests of a nation. These interests are basically cultural, not political or economic. The quotes lose some of their effectiveness due to being buried within long, disserting sentences. As he sees it, our world has multiple ideologies and multiple "living laws." The present world has too many small, sovereign states; discontent within these states is not the result of nationalism, but of the resurgence of culturalism.

Northrop feels that cultural unity offers the prospect for reducing the number of political units into seven cultural political groups in the world today. While supporting the United Nations, Northrop holds that it has tried to take all nations into a single world law in one huge step. This, he considers to be its central weakness. He claims that declining nationalism and resurgent culturalism offer a vehicle to bring the world first, to a relatively small number of cultural political units, and eventually to a single, common world ideology. He feels that our foreign policy should be directed to the achievement of this goal.

Northrop concludes that our power politics is not effective. The only effective power in the last analysis is moral power. This book, written for the intellectual, is fairly difficult to read. It offers a different approach to the solution of world problems by recommending the substitution of a cultural understanding for power politics. Its thesis is challenging, in spite of occasional course syntax; its possibilities are great.

WINCHESTER. The Gun That Won the West. By Harold F. Williamson. 494 Pages. Combat Forces Press, Washington, D. C. $10.00.

BY LT COL THOMAS O. BLAKENEY, *Armor*

This book will prove a disappointment to many "gun-cranks"—depending on what they expected the book to contain. The title is as misleading as it is eye-catching, for this book is not so much concerned with "the gun that won the West" as it is with the economical development of the company which produced the gun.

In fact, this is an accurate and carefully documented history of the growth of the Winchester Repeating Arms Company.

The fact that Winchester produced garden tools, batteries, skates, refrigerators, and toys will be of only passing interest to most military readers. Similarly, the reproduction of past advertisements for these items, which is included, is of little interest.

It was surprising to find that Oliver F. Winchester was a successful shirt manufacturer who got into the gun manufacturing line purely as a business investment. His apparent interest in guns was confined to making a profitable business success of the defunct Volcanic Arms Company. This is an interesting side light, for most readers would expect Mr. Winchester to have been a pioneer technician similar to Horace Smith and Daniel Wesson.

For the "gun-crank," the best part of the book is the rather short account of gun and ammunition development. The pictures and illustrations are excellent. The appendices contain other valuable information, such as ballistic data, arms serial numbers, and a fine picture index of all Winchester arms which should prove a good reference for any gun hobbyist.

The author has created a monumental book which contains items of great interest to the individual gun lover, the economist, and the historian. As such, it will be a welcome addition to most personal libraries. However, one cannot escape the thought that Dr. Williamson has combined two books into one, with his interest in economics overshadowing "the gun that won the West."

DICTIONARY OF CIVICS AND GOVERNMENT. By Marjorie Tallman. 291 Pages. The Philosophical Library, Inc., New York. $5.00.

BY LT COL E. VAN RENSSELAER NEEDELS, *CmlC*

While this volume is called a dictionary, it is, in fact, a compendium of hundreds of words and expressions used in current discussion of civil and political affairs. Many of the terms are of ancient usage but are applicable to modern discourse. To avoid duplication and yet provide complete coverage, many cross references are made.

In addition to items intended to provide a clearer understanding of national, state, and local government, other fields are represented by topics extending into sociology, economics, and foreign and international affairs having a strong bearing on American politics and government.

Simple definitions are given in most instances. Examples are cited and analogies drawn to clarify the points in question.

The treatment of any one item could not be considered as exhaustive. Normally, the user of the dictionary might be one who could relate the definitions to his existing knowledge or use them as bases for further consideration and study. Nevertheless, his understanding of political terminology will be enriched by contact with this volume.

THE STRUGGLE FOR EUROPE. By Chester Wilmot. 766 Pages. Harper and Brothers, New York. $5.00.

DEFENSE OF FREEDOM. By the Editors of *La Prensa*. 315 Pages. The John Day Company, New York. $4.00.

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Portugal
Revista Militar, Largo da Anunciada 9, Lisboa.

Uruguay
Biblioteca de la Inspección General del Ejército, Montevideo.

Venezuela
Negociado de Publicaciones de la 2ª Sección del Estado Mayor General, Ministerio de la Defensa Nacional, Caracas.

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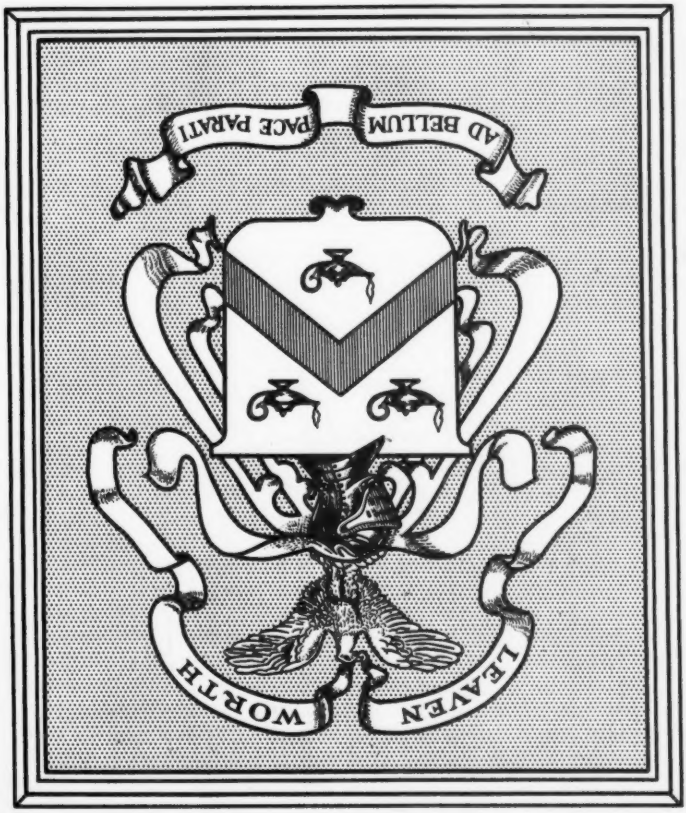
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